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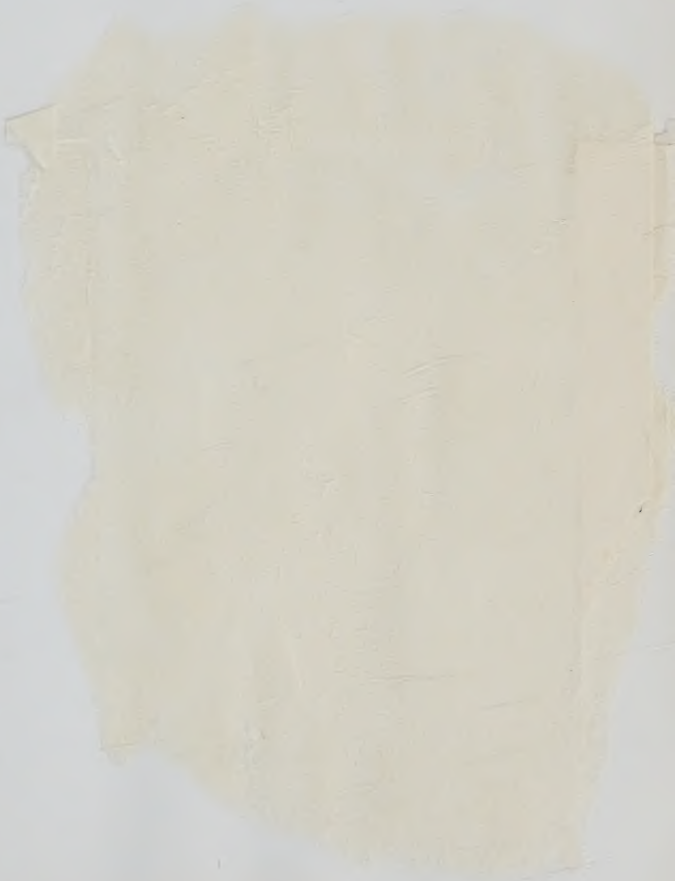

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GARDEN PLANNING

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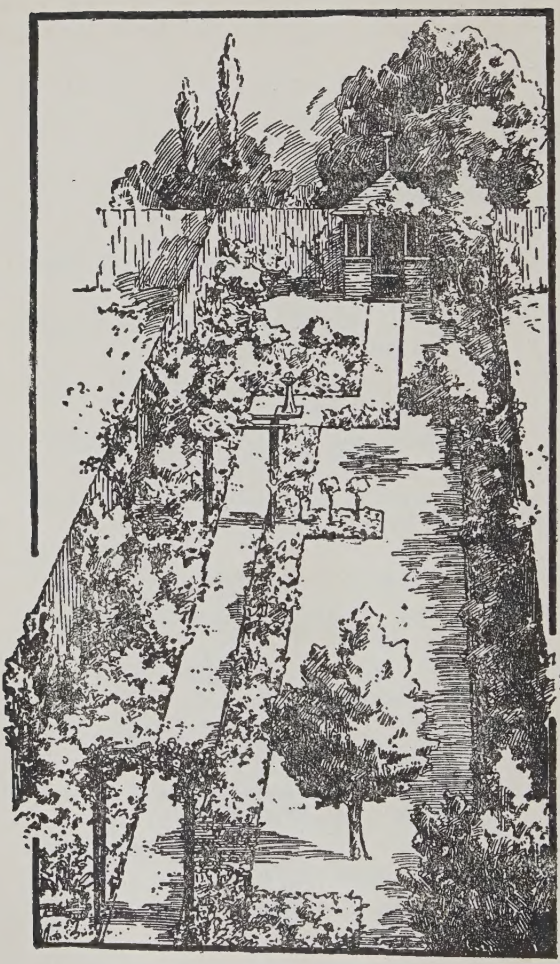

GARDEN PLANNING

BY

W. S. ROGERS

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GARDEN CITY NEW YORK
DOUBLEDAY, PAGE & COMPANY
1917

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PUBLISHER'S PREFACE

There are several justifications for the appearance of a book on Garden Planning. One is the meagre treatment the subject has heretofore received as compared with the more mechanical phases of garden making—planting, cultivating, etc. Another is the vital, though often unappreciated, importance of the subject, especially in this day of countryward, outdoorward tendencies. The significance of the cash valuation of the work of the landscape architect when contrasted with that of the gardener is not often grasped.

This volume, however, is designed for those who are not inclined to make use of the services of a professional garden designer. Either excessive cost or intense personal interest in the development of the home grounds may effect this result. In either case he who plans his own garden will do well to familiarize himself with the principles, methods, and probable results as set forth herein.

The ultimate ideals of art, taste, judgment and harmony are not local but universal. A successful discussion of their principles is of value not to one nation, but to many. The present volume, written by an Englishman, from an English point of view, has, added to the weight of his practical knowledge, the benefit of England's many years of experience in garden making. It carries to the reader both the writer's originality of treatment and the conventionality of well-founded theories.

But few alterations for the benefit of American readers have been necessary in the text. The lists of plants in the appendix have been more extensively revised in adapting them to American conditions, but in every case the aim has been to amplify, not to arbitrarily change, the original list. In regard to the rearranging and compiling of the present tables, acknowledgment is rendered to the following whose efforts have supplied valuable assistance: L. H. Bailey, P. T. Barnes, J. J. Levinson, W. C. McCollum, Wilhelm Miller, Thomas Murray, J.T. Scott, M. C. Sedgewick, and E. L. D. Seymour. The nomenclature has been standardized according to L. H. Bailey's Cyclopedia of American Horticulture.

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GARDEN PLANNING

GARDEN PLANNING

CHAPTER I

Introductory

The planning of a garden is not the simple matter it may appear at first sight. It involves attention to many considerations connected with the character and position of the site and its surroundings, as well as to those questions in which both horticulture and good taste play important parts.

Each particular site presents a problem in itself, and the art of the garden maker must be exercised first in studying the factors, and then in permitting them to guide him to a good result. What these factors are will appear when I come to details. It is sufficient at the outset to state that they include such inherent conditions as soil, position, aspect, and environment.

Though garden making in a large measure

is controlled by principles based upon art, purely artistic considerations can only serve the designer when they are subordinated to the practical needs of horticulture.

As in other branches of applied art utility claims first consideration, so in garden making the conditions which make for the welfare of the flowers, and the comfort and convenience of those who use the garden, must always receive attention.

This does not imply that successful flower culture is the be-all and end-all of gardening, for that would be to ignore the beauty of the garden picture. It is possible, as I shall show, to give due weight to the picturesque, without in the slightest measure discounting the value of the garden from a horticultural standpoint. On the other hand, only too frequently the mistake is made of supposing that well-filled beds and borders, abundant blossom, and neatly kept grass and walks are the sole *desiderata* of gardening. If that were so, it were better to grow one's flowers as the market gardener grows his cabbages — in rows. Mere profusion of bloom will not condone any ill-planned garden. The gardening enthusiast is too ap-

to permit his pride in the flowers to blind him to the value of a garden picture. He sees the individual but not the crowd. It were better he should adopt the standpoint of the landscape gardener, who thinks less of plants as plants than as elements in a composition, in the way of a painter of pictures.

The garden, however small, is amenable to treatment on truly artistic principles, and the first thing to recognize is that it must be homogeneous. It should appeal to the eye as a whole before it claims attention in detail. Everything in the garden must be interdependent, and the general picture must be distinguished by balance, unity of effect, and a studied harmony of line and mass.

If common-sense principles, based upon full knowledge and recognition of the governing factors of the problem, be allowed to control the design, the result will not only make for beauty, but gardening, in the sense of successful flower culture, will be agreeable and plain sailing.

There must be no exaggeration of special features, no discordant note to worry the eye, no forcing of effects. The size of the garden

hardly enters into the question. It is just as easy, and just as difficult, to plan a large garden as a small one. The same general principles apply in both cases. It is largely a question of scale.

Gardens which are made haphazard are rarely successful, yet the majority of small gardens have been so made. The inference is obvious. How often do we not see, from the vantage point of some suburban railway line, garden after garden in monotonous succession, all planned to a common type. Some may be neat and well kept, others neglected, but the outlines are the same in all, probably conceived and made by the speculative builder's foreman, whose knowledge and skill can hardly be expected to rank high in this department of his work.

When the gardener himself has taken the pains to model his garden to suit his own views of what it should be, the result is more often than not marred by mistakes which arise from hastiness and an inadequate knowledge of, or attention to, essentials. Possibly the commonest error is to ignore aspect, planning for symmetry, which is hardly ever consistent

with the best arrangement for flower growing in a plot of limited size. Another mistake is to over-elaborate, thereby destroying simplicity and breadth of effect.

I do not intend to enumerate here all the shortcomings of the modern villa garden. I hope to make them sufficiently apparent when I enter into a more detailed statement of the principles which I believe should govern the planning of such gardens. Skilful planning, particularly when applied to gardens of limited size, includes economy of space, or, in other words, making the most of the space available. And this is only possible by giving proper consideration to aspect.

The craze for symmetry prevails too strongly in modern garden planning. Grass and gravel are allowed to usurp positions best adapted to flower culture, whilst long stretches of border in perpetual shade hold a few starved plants, whose sorry condition proclaims the futility of expecting nature to heed our notions of equal-sidedness.

Sunshine, the life and soul of the vegetable kingdom, and the very first necessity for the flower, must have full access to our beds and

borders, and this is only to be contrived by placing them where the sunlight can reach them. Therefore it is a necessary preliminary to the planning of a small garden to observe which parts of it enjoy full sunshine and which parts lurk in perpetual shadow. The north side of the house or of a garden wall, in northern latitudes, receives no sunlight, and permanent shadows may be cast by trees and buildings on neighbouring premises. These shadows are as rocks to the careful navigator, things to be given a wide berth, unless circumstances (as in the case of redundant trees) permit of our bodily removing their cause.

CHAPTER II

The Factors in Detail

The question of site is a highly important one from the gardener's standpoint. In the renting of a house so many considerations carry weight with the tenant that it is not always possible for him to be over-fastidious about the garden; though, if he have the choice between two or more houses, in other respects equally desirable, he will naturally decide upon that one which has the best garden site. If the house has been previously occupied he will find the garden already made, after a fashion; if not, the same may hold good. On the other hand he may find a stretch of virgin soil awaiting his good pleasure to give it shape. Whatever may have been done before he takes possession should not deter him from starting *de novo*, with the object of securing the best possible arrangement of the outlines before he commences to plant it.

In considering the desirability of a garden site under these circumstances the main thing is to see that the plot receives a fair measure of sunshine. With a house facing south, it is not possible to avoid a considerable shadow from the house itself, but intelligent planning will meet this case. A garden surrounded by a high wall also will have the disadvantage of the wall shadows on the southern boundaries.

Naturally such questions arise most often in connection with town and suburban gardens where houses and gardens adjoin. In the open country different considerations may present themselves. Most generally the country plot has no lack of sunshine.

But other disabilities may exist, amongst which the absence of shelter may be the most important one. The tenant, therefore, should see how the site lies, both in relation to the prevailing winds and to the cold winds of winter and spring.

Gales from the west and south-west are often very destructive to trees and plants by reason of their force alone. On the other hand, the cold winds from the north, north-east, and east do damage by their low temperature

and dryness, "cutting" and destroying young growth, and retarding the progress of plant life generally. The ideal site for a country plot, therefore, is one which is open to the south and preferably sloping slightly in that direction, partly sheltered by higher ground or trees to the west and south-west, and wholly sheltered to the north and north-east. Such sites are not easy to find, and in most cases the tenant has to be content with something short of what he would wish; but, as I shall show, he may do much by artificial means to make good the shortcomings of the site.

Another point more likely to crop up in the country is the question of the dryness of the soil, which is intimately connected with its temperature, and thus affects the welfare of the flowers. The warmth of a site, other things being equal, is influenced by the nature of the soil.

The following table, compiled by Schübler, shows the relative heat-absorbing capacities of various soils, assuming 100 as the standard:

Sand with some lime . . .	100
Pure sand	95.6
Light clay	76.9

Heavy clay	71.1
Brick-earth	68.4
Chalk	61.8
Humus	49.0

The coldness of a damp site is due to the absorption of heat resulting from evaporation.

When the prospective garden owner is able to purchase rather than merely to rent the property the question of the garden site may well receive more earnest consideration.

Individual tastes differ greatly on the question of what is or is not a valuable site. One person may desire seclusion, and on that account may prefer his small domain circumscribed by natural limits to the view; another may value the panoramic prospect to be obtained from an eminence, finding the pleasures of his garden enhanced by the landscape beyond.

Other considerations may have weight, but in all cases the proximity of an eyesore in the immediate surroundings is to be avoided. Ugly buildings, waste land scattered with rubbish, small property inhabited by undesirable people, a cemetery, factory, or gas works should disqualify an otherwise desirable

site, unless it were feasible to screen those objects by artificial means.

Thus far I have dealt with questions external to the site. The next thing is to examine the land with a view to discovering its intrinsic fitness for its purpose as a garden.

A house perched upon a hilltop, or in the centre of a treeless field, has a bleak, forbidding aspect, which it may take many years to redeem. It is therefore a great gain if the plot includes some well-grown trees, which may be utilized for shelter, and which will at once confer a certain distinction on the site. The presence of old hedgerows and bushes should also be welcomed, as it is often possible to utilize them in the garden scheme.

The contour of the ground is an important point. Sites, particularly if of limited extent, which embrace considerable slopes are disappointing, and present difficulties to the gardener which he had best avoid. On the other hand, variety of contour is a gain, offering suggestions for picturesque treatment and giving character to the garden picture. A uniform slope, if slight and in a southerly direction, is preferable to a dead level, as it ensures

natural drainage; but when a tennis lawn is a *sine qua non* it is desirable that some portion of the ground should be level, or have only a moderate slope; otherwise much expense will be entailed in excavating and banking up, and the artificial contours thus created will become unduly obtrusive. Happy the gardener who is content to forego this feature, which rarely harmonizes with the other elements of the garden plan, and more often than not usurps space that otherwise could be utilized with advantage to the garden picture.

In further considering the desirability of a given site it is well to try to fix provisionally the position for the house, which in most cases will be suggested by the lay of the ground and by its aspect; and, having done so, to endeavour to form a mental picture of the main elements of the garden, giving due weight to the natural features of the ground and its surroundings as factors in the arrangement. By doing so it is possible to judge just how far it is likely to meet one's ideal.

In a comparatively small plot the process will be a simple one. In a large plot the matter may involve more difficulty, as alternative

positions for the house will suggest themselves and call for consideration. No decision should be made until the possibilities of the site have been thoroughly tested from every standpoint.

The question of the house site is so closely linked up with the treatment of the garden that I strongly advise this preliminary survey before purchasing the plot.

Soil — Reference has already been made to the relative heat-absorbing qualities of various soils. In forming a judgment on the suitability of a particular site for gardening purposes it is essential to ascertain the nature, not only of the surface or top soil, but of the subsoil. This can only be done by having a trench dug, say, at least four feet deep. If the plot is of considerable extent, a series of trenches should be opened out at various points, because soils, and subsoils particularly, may vary even within the comparatively restricted limits of a garden site.

The surface soil is not always very closely related to the subsoil, so that even those accustomed to forming a judgment on the subject may be misled by a superficial examination.

A good criterion of the relative warmth of soils is available in winter when snow has fallen. That ground from which the snow soonest disappears is obviously the warmest. Information on this particular point generally may be obtained from local people well acquainted with the site.

A stiff clay subsoil is to be avoided, as it is not amenable to effective drainage. Sand, gravel, and light loams are preferable to clay soils, but where clay and sand are found in admixture, as in some of the clay loam types the condition would not preclude good gardening; indeed, the rose grower would find a soil of this description one of the best for his particular purpose.

The dryness of a site depends mainly upon the facility with which the rain-water can percolate through the soil, and the distance from the surface of the subsoil water. Clay is relatively impervious to water; consequently, when a layer of this material is found near the surface, the surface soil will be either water-logged or baked to dryness, according to weather and rainfall.

A gravelly soil of considerable depth on a

gentle slope, all things considered, is the best, as such a soil is drained naturally. If topped with good loam, with not too liberal an admixture of stones, it is an ideal one for the gardener.

A coarse gravel subsoil is not objectionable, provided the surface soil has sufficient depth to admit of proper tillage. It is not unusual, however, to find gravel overlaid with the merest film of loam, in which case the land would be unsuitable for general gardening purposes, unless the purchaser were prepared to spend money in importing material for his flower beds and borders.

Soils overlying rocky formations must be judged by their quality and depth. When the surface soil is shallow, and the rock impervious to water, they suffer from the same disabilities as stiff clay land.

The presence of stones in the surface soil, generally associated with a gravelly subsoil, but not uncommonly with stony clays, is no great detriment; but if they are in sufficient quantity to hamper the gardener he would have to resort to picking or screening to reduce their number. On sloping ground the stones

will be found in greater quantity at the lower levels, particularly if the land has been in cultivation.

Light, sandy soils suffer from drought, and involve labour and expense in heavy manuring. Much may be done by the gardener to improve a naturally undesirable soil. Light soils may be treated with clay or muck, and clay soils with sand, ashes, and other light, porous materials. By these additions the nature of the surface layer may be modified and rendered more amenable to tillage; but no treatment of the surface will meet the case if the subsoil is unsuitable. These operations necessarily imply outlay, which in a large garden may be a heavy one. It is therefore advisable, when the purchaser has a choice of sites, to select one on which the soil is neither too heavy nor too light.

Another point in the selection of a site is to avoid made ground the composition of which may be anything from gas lime to meat tins. A site of this kind would afford many unpleasant surprises to the gardener, and might be perfectly hopeless for horticulture. Made ground which has long remained undisturbed —

and it is not often offered for sale when newly made — is generally so thickly covered with surface growth that its character is not superficially apparent. Here again the trial trench suggests itself as a wise precaution.

Peat land does not constitute a good site, because the existence of peat implies water-logging. Drainage, however, may be effectual in converting it into a good garden, always provided that the nature of the subsoil permits of draining it thoroughly.

Land which has recently been in cultivation, either as arable or garden ground, is in most cases preferable to pasture; because it has a greater depth of surface soil, and constant working and manuring have brought it to the best consistency for the gardener's purpose.

On the other hand, pasture has certain advantages. There may be some additional labour needed to bring the soil into working condition, but against that it may be possible to preserve part of the pasture as grass, and thus avoid the necessity for turfing or sowing.

Aspect — In gardens of small size the question of aspect is perhaps the most important factor for the gardener to consider, because

the size of his garden will be measured, not so much by length and breadth as by the amount of space which receives full sunlight. Aspect also is the key to the successful planning of the small garden, as I shall show when I come to treat the garden design in detail.

I shall have to refer repeatedly to the aspect of a site by the points of the compass, and to prevent possible confusion I had better here state that I shall, in every case, employ the term to express that point to which the "house front" is directed.

The sun in our latitude passes from east to west by a sweep to the south. Thus the north side of houses, trees, and other fixed objects receive absolutely no sunshine, whilst the east and west sides receive sun only in the morning and evening respectively.

These are cardinal facts to be borne in mind by all who undertake to plan a garden of restricted size.

I can best illustrate the relative values of aspect by a series of diagrams, the study of which should serve to make the matter clear.

In these three figures I have shown the shadow traces of the house and garden walls,

distinguishing full shadow from partial shadow by the depth of shading.

A southern aspect implies that flower culture

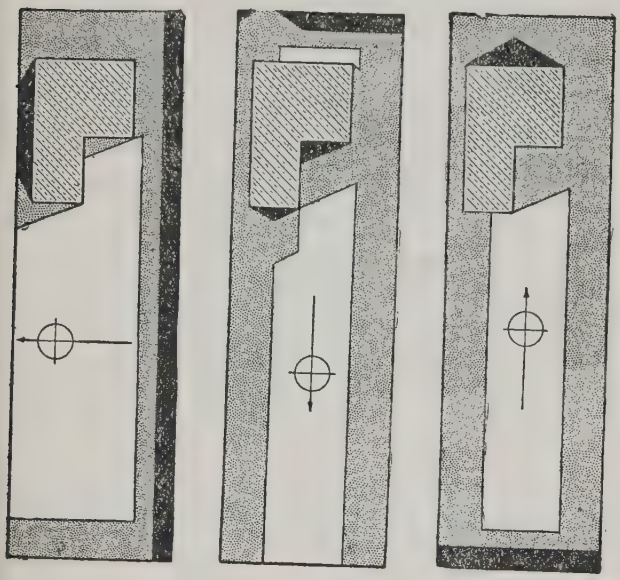

Fig. 1.— Diagrams illustrating aspect

will be discounted in the space immediately to the rear of the house. But if the gardener has a fancy for good flower effects in the fore-court, or front lawn, he should select a southern aspect. An eastern or western aspect

will give a shady strip on the north side of the house, which may be good or bad according to circumstances. It is best that the shady side should be that on which the kitchen and its offices are situated, thus admitting of flower growing at the side of the house upon which the living rooms look out.

These shadow diagrams represent a mean of what would actually be found. The altitude of the sun varies according to season, as well as time of day, and thus the shadow of a wall running east and west will be narrowest at noon in midsummer and widest in the morning and afternoon in midwinter. The shadow of the house will vary in like manner for the same reason.

In open country sites, where considerations of privacy do not carry so much weight, walls and fences need not be so high, and their shadows, therefore, would be practically negligible. At the same time, the shadow question must not be overlooked, as trees and other fixed objects may exist on the site or in its immediate vicinity.

The House in Relation to the Site — When the purchaser of a building plot decides upon

the position for his house, he rarely gives thought to the question of how the garden will be affected. He assumes that it may be modelled to fit in with the house. It is better to take both factors into consideration when placing the house upon its site, because they are closely correlated. In these days of narrow frontages there is little latitude in a direction transverse to the length of the plot, and, if economy of garden space is to be considered, the purchaser must give careful thought to the placing of his house, so that he may not be hampered when he comes to make his garden. This question will be governed largely by aspect, but to some extent by the tastes of the gardener.

A fore-court is always desirable, if only to ensure that the road dust does not find access to the house. In a thoroughfare used by automobiles it is a necessity. It is also useful for securing a measure of privacy. With a northern aspect the house shadow will preclude any ambitious gardening display in the fore-court, and there is no need to allot more space to it than may be required to secure the two objects just mentioned.

On the other hand, with a southern aspect the fore-court should not be stinted in space, for it cannot be questioned that flowers about the house front not only enhance the good appearance of the house, but constitute a valuable charm in the outlook from the front windows.

A detached house should not be set centrally in the width of the plot, because that would divide the garden space on either side into two equal portions not equally well conditioned for flower culture. It is better to place it so that the widest space is on the sunny side.

When the ground falls toward the roadway it may be desirable to place the house on the higher ground at the back of the plot, thus bringing the principal garden space to the front.

All these points call for careful consideration before a decision is made, as upon that decision will depend the subsequent success or non-success of the garden.

Houses set askew — i. e., obliquely to the garden boundaries — on small plots rarely look well, and the arrangement creates no little difficulty when the task of designing the garden

has to be undertaken. I am strongly opposed to any conditions which necessitate the use of triangular areas as elements in the garden

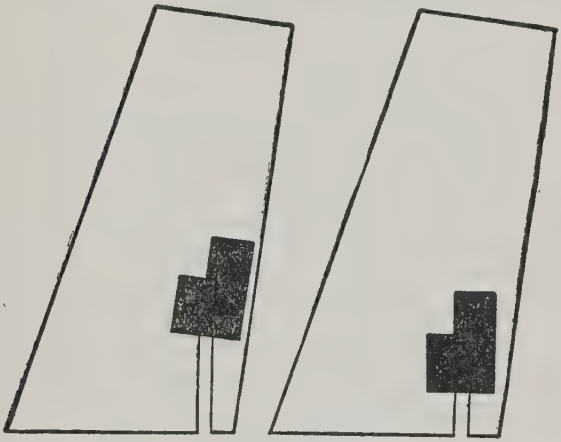

Fig. 2.— Houses on plots of irregular shape

design, because such shapes invariably suggest formality, and have other disadvantages.

When the plot is bounded by converging lines it is usually best to set the house with its sides parallel with that boundary which most nearly makes a right angle with the road line; but in some cases it may be best to set the house front parallel with the roadway, ignoring the side boundaries.

In plots of more irregular shape the question must be settled according to circumstances.

From the foregoing it will be seen how intimately the position of the house in relation to the shape and size of the plot is bound up with the garden plan.

It is not unusual for house builders to defer consideration of the garden until the architect and builder have completed their work. The garden designer is then called in, and has to make the best of those spaces which are left to him. A wiser course is to bring architect and garden designer together in the first instance, so that they may exchange notes, and each work out his plan in accordance with such decisions as they may mutually agree upon. Such a course is eminently to the advantage of the owner of the site, who thereby secures a consistent design for house and garden. A thorough understanding between the two craftsmen lightens the task of both, and precludes an incongruous result.

A further point is the question of outlay to be made on the garden. This is usually assumed to be so small an item in the total outlay that it is left out of consideration

altogether. The result is that the house builder discovers that the expense of building, with the inevitable "extras," has mounted up to such a sum that he must perforce economize on the garden. Then it is that, with mistaken views as to the economy of the transaction, he calls in the help of a local nurseryman to "lay out" his garden, and in the long run pays a larger bill than he would have incurred had he secured the services of a competent designer, at the same time securing an indifferent result. The nurseryman who works out his own plan, charges what he likes, whereas, if a properly prepared plan is available, the house owner may obtain competitive prices from two or more nurserymen, and make a contract for the work on the best terms.

The cost of a good design is a trifling sum on the total outlay, and it invariably justifies itself.

CHAPTER III

The Garden Picture

The design of a garden should take its general character from the local conditions and environment. In the first instance, it must be adapted to the special requirements of the gardener. If he is his own designer, he will, of course, always have these requirements in mind; if another makes the design, the gardener cannot be too clear in specifying his exact requirements.

The natural conditions of the ground must be well studied. The contours, slope, and aspect of the plot are the first factors to be considered, and these will offer the first suggestions for its treatment. The shape of its boundaries will be important, and equally so the position and shape of the house.

The aim of the designer should be to bring all these factors into a consistent and pleasing combination, in which the garden and house

are in entire harmony with each other. Here it will be well to warn the designer new to the work against planning for mere effect on paper. The lines of the plan, representing as they do the projection of the design on the horizontal plane only, have little meaning if they are not intimately correlated with some effect in the third dimension. A garden at all stages of its development should be a thing of height as well as of length and breadth. It is only by studying the effect in the vertical plane that a successful and artistic result is realizable. The plan is a skeleton affair, merely defining the spaces to be devoted to borders, beds, grass, and gravel.

The designing of a garden is a process akin to the artist's conception and execution of a picture. It is governed by principles identical with those understood by the painter as "composition," which may be defined as a general balance of effect obtained without the use of a too marked symmetry in the principal features of the design.

To ensure practical realization of this effect, therefore, the designer must ever bear in mind

the plants — flowers, trees, and shrubs — with which his outlines will be filled in.

It may be noted also that he has it within his option to supplement these natural factors by others of an artificial kind, such as summer houses, arches, pergolas, and other minor structures which have a well-recognized place in the garden.

I cannot too strongly urge the importance of eliminating symmetry from the general garden picture; not only because it precludes a picturesque effect, but for the practical reason that it is rarely consistent with a design which gives due weight to the all-important factor, aspect.

Many complaints of undue formality have their basis in the existence of a meaningless symmetry. In observing these injunctions against symmetry it must not be understood that they apply with the same force to details. On the contrary, the treatment of certain parts of the garden may be governed with advantage by considerations of symmetry. For instance, in introducing a group of beds for effect on the lawn, a one-sided arrangement would be opposed to good practice,

particularly if associated with a grass plot of regular shape.

Just what constitutes formality, as usually understood, it may be well here to discuss. It may arise from several causes. Unquestionably the most common one is symmetry in the general lines of the design. Another cause may be injudicious planting, particularly when the gardener has not adopted means of building up a well-considered picture in the vertical plane. Such mistakes only need to be recognized to be corrected. Trees planted sentinel-wise, at equal distances from a central feature, will produce a formal effect. They would be better arranged so that no two subtend the same angle in the line of sight (see Fig. 31). The repetition of some conspicuous feature at regular intervals also makes for formality, an error not infrequently made in planting with conifers and other evergreens.

Complexity in detail may suggest formality, by proclaiming too insistently the artificial character of the garden. Still another cause is neglect to preserve a proper scale in the various details. It might be concluded that the use of straight lines and right angles would

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lead inevitably to a formal result. Such is not the case. On the contrary, in small gardens the use of straight lines, in combination with a studied simplicity of treatment, is the most efficient means of securing an informal result, because it enables the designer to harmonize his plan with the shape of the garden boundaries.

On the other hand, the use of curved lines may only serve to render too conspicuous the rigid outlines of these boundaries. I shall deal with this part of the subject in more detail in the next chapter.

I must here emphasize the value of variety — variety in outline and variety in shape — as opposed to too frequent repetition of similar shapes, and variety in planting so as to secure a good effect in the vertical plane.

Such variety must be carefully thought out, and made to give character to the garden as a whole. This does not imply over-elaboration, about which I have already warned the reader, nor is it opposed to simplicity of treatment. It is just the avoidance of undue repetition of lines and shapes.

Another factor in the attainment of the

picturesque is what I may term "reticence." It is not well to aim at giving too comprehensive a view of the garden from any one point. The planning should be so contrived that the various garden features are seen one at a time as it is traversed from end to end. This may be arranged by judicious screening, for which trees, shrubs, arches, trellises, and other objects may be employed. Much may be done in the planting to attain this very desirable quality. A long herbaceous border, filled with flowers carefully graded in height, the tall ones all standing at the back and the short ones in front, presents a rather monotonous vista. Its charm is greatly enhanced if the process is partly reversed, so that here and there a bold clump of flower or foliage is allowed to push forward, thereby screening what lies beyond; and incidentally this arrangement has value in affording shelter to the smaller and more tender plants lying between their robuster companions.

Nothing is more delightful than to pass along such a border, finding something new and unexpected every few yards.

Again, the garden may be divided up into

separate compartments, each to come into full view only when it is entered. Passing down between well-filled borders, we may thread a pergola clustered with flowering climbers, to reach an old-fashioned garden which, in turn, leads to a shady grass plot, or, by another flower-flanked path, to the vegetable garden. Each section of the garden is complete in itself yet wedded to its neighbour, each a separate factor in the complete picture, and all united in a consistent and harmonious whole.

The task of the designer does not stop at this point. He has other factors to consider. It is essential that the picture should not be merely a group of closed-in compartments. He must contrive a series of vistas, which, whilst giving pleasant peeps from certain points, convey a sense of space. In other words, the treatment must include that artistic quality known as "breadth." This is to be attained in part by the opening up of vistas, and in part by simplicity of character in the principal details of the design.

One frequently hears the term "a natural garden." I may here state that a natural

garden within the limits of four square boundary walls, in the sense of a garden which shall deceive the spectator into believing that he is looking at a piece of pure nature, is unattainable. Nor is it desirable that we should strive to make such a garden. Yet Nature cannot be left out of the question. The gardener provides the home and the tenant, and there his work ends. He must rely upon the hand of Nature to fill in the outlines, which she can do far better than he can tell her.

It should ever be remembered that the highest art is that which conceals art. The effects which we create in our gardens, therefore, must be so contrived as not to reveal too patently the means by which they are produced. By the observance of this principle we get the nearest approach to a natural garden, inasmuch as the examples of nature's work then impress us more strikingly than the work of the garden designer — and this is as it should be.

I must now refer to a further quality which it is important to introduce into the garden, *viz.*, repose. Repose is closely correlated with breadth of treatment, but it also involves a

proper proportioning of the main elements of the design, the borders, grass, and walks.

As regards the walks, it is only necessary to see that they exist for a definite purpose (not merely because the designer thinks they help the outlines on his paper plan) and that they do not sprawl aimlessly about the plot, cutting it up into awkward shapes.

Grass, more than any other feature, helps to secure a feeling of repose. As far as possible it should exist in a single stretch, or at least it should not consist of a number of scattered pieces.

Apart from questions of tennis and croquet, the grass is a valuable background to the flowers; a place where the feet may escape the "crunch" of gravel, and one may find perhaps a corner bathed in shadow, from which to look out upon one aspect of the garden picture, or to enjoy one's thoughts or thoughts of another between the covers of a book.

Let the grass, therefore, take its proper place, and be duly proportioned to the rest. And so with the beds and borders. It is little short of vandalism to fret the lawn into a lace-work of fantastically fashioned beds, in

which geometry is invoked to provide the gardener with inspiration. Nature does not grow her flower groups within the rigid limits of five-pointed stars, crescents, and crosses. Beds in grass are sometimes admirable features in the general scheme, if modelled on simple shapes. The more elaborate the form of the bed the more time and labour will be expended in preserving its geometry, and the less enjoyment will be derived from the flowers. The maker of stars and crescents, moreover, should realize that an acute angle is an awkward one to which to adapt his flowers, and that to preserve the outlines of such beds it is necessary to fill them with puny plants, which, by constant pinching, are prevented from developing their natural charm of form and character. The result is that the bed is exalted above the flower, and the whole device becomes a mere formal patch of colour, exciting no more worthy emotion than an admiration for the gardener's patience and skill with the turf trimmer. Better to adopt a simple circle, square, or rectangle and to be not too particular if the flowers spread on to the grass, so long as they grow under natural

conditions and yield their harvest of blossom. The outlines they create under such treatment blend softly with the turf, and are far more sightly than the hard edges fresh from the trimming tool.

I have already made it clear that the garden design must grow out of the garden itself, and this is only another way of saying that the garden must harmonize with its site and surroundings. There may be some conspicuous natural feature on the site which would furnish a theme for the designer — a knoll, a drop in level, or the presence of a natural pond or stream. Whatever it be, it may be utilized as a basis on which to build up the other details. The house also may provide the theme, and then the garden must be designed to harmonize with its outlines and character.

A house permitted to stand up bleak and naked from an expanse of gravel or turf will always wear an aspect of aloofness from the garden. The first care of the designer, therefore, should be to fill in the angles where the house rises above the ground, either by the use of shrubs, or by placing borders against the house wall, as circumstances may dictate.

Preconceived ideas, acquired before the site has been thoroughly surveyed, should not be allowed to influence the designer. Your neighbour's garden may be a model of good taste and successful horticulture, but, slavishly copied on another site, may be a dismal failure.

The picturesque character of a garden may be marred as much by sins of commission as by sins of omission. There are gardens in which no expense has been spared to ensure a splendid succession of bloom, utterly ruined by the introduction of garish and incongruous accessories. The smaller the plot, the stronger apparently the temptation to import these eyesores. The garden maker cannot be too watchful against the use of inharmonious features. Such accessories as summer houses, arches, pergolas, dials, and garden seats should be designed to suit the garden, and their details and mode of construction should be simple and unostentatious. Paint should be sparingly used, if at all, and its colour should be chosen so as not to compete with the flowers. I have seen a wide expanse of trellis painted canary yellow, which for crudity and ill-taste would be hard to match, yet the perpetrator

was content to grow nasturtiums upon it, quite unconscious of having outraged the canons of art.

The so-called "rustic" work is rarely in good taste. If the summer house is to be decorated, what better means can be found than allowing some pretty creeper to scramble over it, softening its outline and loading it with bloom?

Terra-cotta, china, and cast-iron vases should be used with caution. They are generally out of scale in a small garden, and never quite satisfactory unless associated with a terrace wall, or some similar structure. In most cases their place could be taken by stout oaken tubs, with advantages on the score of appearance.

The gardener must be hoplessly depraved if he admit such objects as minerals, mechanical models, and sea-shells into his garden. If he possesses any of these curiosities let him find a place for them apart in a special museum.

Given discretion in excluding the inartistic and incongruous, there may be still room for mistakes in the use of garden accessories. They may be selected so as not to be in proper

scale with the garden, or with that part of the garden in which they are to be installed. In these matters the designer's instincts must guide him to the attainment of what is correct. Good proportion is largely a matter of intuition, though a sense of fitness may come from knowledge and good sense. Let the garden maker decide as far as possible by the help of both. The golden rules are:

Use before ornament.
Simplicity.
Appropriateness.
Sound construction.
Scale.

As every garden picture must have a focus, or, in other words, a point of interest to which the eye will naturally direct itself before it can properly appreciate the general effect, I attach much value to the summer house as a suitable device for the purpose. It makes a very natural terminal to the principal path, and is therefore "led up to" in such a way as to enhance its usefulness for this purpose. Again, the pointed roof is admirably adapted for constituting the apex or summit of the garden picture. This particularly applies to

new gardens, before it is possible to utilize the trees as conspicuous elements in the picture. A well-constructed summer house, weather-proof, and placed so that its open side is in shade, is a most desirable addition to any garden, however small, both as a picturesque feature in the design and as a useful retreat in hot or rainy weather.

Of other garden accessories I shall have occasion to treat in their proper place.

Though I am writing in the main in the interest of flower lovers, I shall make reference to the kitchen garden, and here I may point out that it is often feasible to so wed it to the flower ground that it materially helps the garden picture. In small gardens, where the owner desires to reserve a plot for vegetables, the apparent size of the garden is reduced if the vegetable ground is screened off. On the other hand, if left in full view, it contrasts too conspicuously with the flower ground.

It is best to take both factors into consideration when making the garden design, and, by means which I shall describe in detail later on, to blend flower and kitchen garden into harmony. In this way the garden vistas may

be lengthened without curtailing the vegetable space, and even the tenants of the latter may be made in some measure to contribute to the garden picture, particularly if fruit is grown.

There are certain practical considerations in town and suburban gardens which demand that the vegetables should be grown in that part of the plot most remote from the house. If fruit trees be planted in the kitchen plot, the blossom in its season is valuable at a time when the flower garden is but little advanced toward its summer display.

There is only one other point to emphasize, and that has reference to garden management rather than to garden making. Yet it is worth noting. I refer to what some gardeners call "tidiness." The striving after a neat, trim, and well-kept garden is apt to lead the gardener into a ruthless trimming and pinching of plants. It is one of the things which can be too well done. The truly artistic garden is one in which the plant has full scope to develop its character. It wants elbow-room, and has no respect for artificial boundaries. It is a sin to curb and mutilate the plant because, forsooth, it pushes out its foliage across the

path. Rather let it enjoy its liberty. The occasional plant which has more than repaid your care by exceeding its neighbour in vigour of growth deserves encouragement. Let it sprawl in reason. It will soften the edge of your border and redeem the straightness of its line. I would even designedly place certain plants so that they may behave in this manner.

And, lastly, beware of the too liberal pruning of trees and shrubs. Nature is always right. She gives a character to each one of her creations, which is its birthright. To trim all trees to a uniform shape, like the wooden models in a child's Noah's Ark, is to destroy their individuality and charm, and to introduce the very essence of formality into the garden.

CHAPTER IV

The Rectilinear Principle

I now propose to enter more intimately into the practical details of garden designing. The suburban garden is usually a rectangle. Its four boundaries are straight lines, and its area is so restricted that these boundaries are only too obvious to the person standing within them.

The house is square at its angles, squarely placed within the garden boundaries, and rightly so. Thus the problem of designing the details of the garden is encompassed by conditions which demand special consideration. We cannot ignore the fact that the skeleton on which we have to build our garden plan is a thing of straight lines and right angles. The problem, therefore, for the garden designer is to evolve a style of planning that will best harmonize with these elements, which by no ingenuity of contrivance can be suppressed.

The treatment I advocate is based upon the use of straight lines, and experience has shown that it is the only successful method of solving the problem. I have termed it the "rectilinear principle." It might, at first sight, appear to imply the very essence of formality, but, under careful scrutiny, this objection disappears. Let us consider the alternative: this would involve the use of curves or irregular lines, which would at once establish a new factor in the problem. The curves might be laid down with the utmost skill with a view to obtaining a unity *inter se*, but they would individually and collectively remain in permanent discord with the rectilinear boundaries, emphasizing their squareness.

It should be understood that the problem under consideration is the planning of a garden of moderate size, to which type of garden alone I should apply the rectilinear treatment.

On garden plots of larger size, even if bounded by straight lines, the case is different. Usually means may be adopted in such cases to sufficiently mask the fences or walls, which, owing to the larger area of the plot, would never be obtrusive.

I claim no novelty for the rectilinear system. In some form or other it has been in use by garden planners since the days of the ancient Egyptians, but not always applied in a way to secure the best possible results. Modern gardeners, having acquired a horror of formal effect, have sought to avoid it by the introduction of winding paths and sinuous edges to their borders. My object is to show that these devices do not achieve their purpose, but rather defeat it.

The question of formality in a small garden must be tackled in another way.

The use of straight lines does not preclude variety and the other factors which make for picturesque effect. But when allied to an obvious symmetry it does engender formality. Therefore I exclude from the rectilinear system any arrangement which gives equal-sidedness to the garden.

These points will be better appreciated by reference to Fig. 3.

At A is shown the type of garden only too common. I may call it the rectangular symmetrical style. It has crystallized into a permanent feature in many city lots. Its faults

are many and obvious. It is not correlated with aspect, and therefore does not make the most of the space. Such a garden would handicap the flower grower. Its symmetry is too pronounced to be capable of being masked in the planting. Its circuit path is

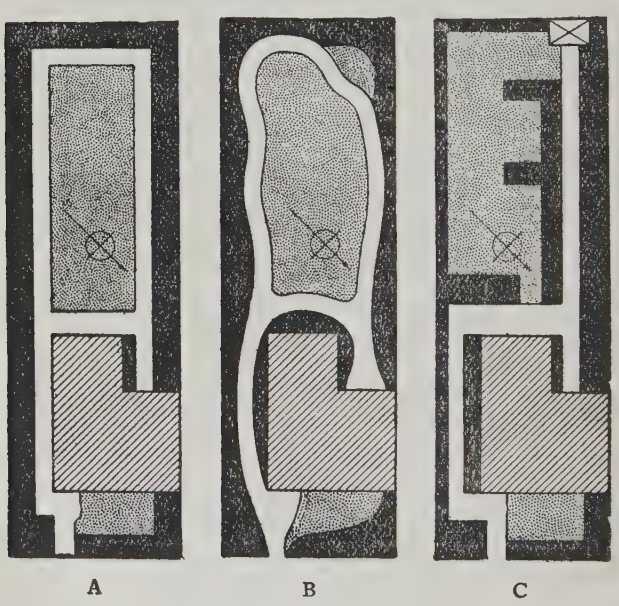


Fig. 3. — Garden styles compared

a waste of gravel and a waste of space. It has no distinction, and it would elude the gardener

who sought to make it picturesque in the fullest sense.

B is the garden which hopes to avoid formality by the use of curves, but fails in its mission because its lines are out of harmony with its boundaries.

C is a simple application of the rectilinear principle, based upon a careful consideration of aspect. In the last example it will be seen that the principal borders enjoy full sun, that the main lines are parallel with the boundary fences, and therefore appear as a natural suggestion from those boundaries; that the path has a definite purpose — to take the traffic where the attraction of the flowers leads it — and that it begins and ends somewhere. The grass is confined to a single area, and includes no shapes which would be difficult to attack with a mower. The keynote is simplicity, which implies dignity and harmony. Such a garden could be planted with the best results in securing a really artistic general effect.

It may be remarked, to prevent misapprehension, that this design is capable of considerable modification to suit circumstances.

It is adapted in this case to a north-east aspect. For other aspects the positions of the borders would be altered, and other details would need modification.

Apart from the more important advantages already mentioned it is clear that it has others of minor moment, yet desirable from the gardener's point of view. The edging of straight borders is always more easily managed than that of curved ones. Stone or concrete edges take truer lines, and are more easily kept in place. The trimming of grass edges can always be controlled by a stretched cord. A straight path is the shortest route between any two points.

In the next following chapters I shall show in more detail how the rectilinear system may be applied to the making of a really picturesque garden.

CHAPTER V

The Elements of the Garden Plan

There are three main factors in the garden plan — the beds, the walks, and the grass.

In the evolution of the garden design the beds (in which term I include borders) should receive first consideration. They may well occupy more space than is usually allowed them. The narrow strips of border so often seen skirting the fences of suburban gardens are practically useless for flower culture. A width of six feet is not too much for the principal border, and it should, if possible, be in full sun. If the main path defines its near boundary, another border parallel to it may be made on the other side of the path but narrower, say four feet wide. This disparity in width is designed to secure variety and to eliminate one-sidedness. Two such borders, the wide one planted with shrubs and herbaceous plants, the narrow one with surface-

growing flowers, become complementary, and offer opportunity for many charming effects, and for the creation of a fine vista. The narrow border would on one side abut on the grass plot, and short transverse extensions of it might be carried into the grass area to break its inner line and to extend the flower space laterally. Such offshoots from a long border become partial screens, helping to secure that quality which I have already referred to as "reticence."

It is by no means necessary that every border should be served by a path. On the contrary, variety of effect is assisted by introducing a border between the grass and the boundary fence, say on the side of the garden opposite to the main walk. These points I shall further elucidate when I come to consider special examples. The main point I wish to emphasize at this stage is that the borders, in which the gardener aims at securing his principal flower display, should be in full sun, and served by the principal path. I also desire to make it clear that these borders must be the dominating factor in the design, for it is not too much to say that they constitute

the garden in the truest sense of the word. The path is for utility, the grass for repose, and both must ever be subordinate to the beds and borders. Hence we cannot give too careful thought to the latter.

Just how the further elaboration of the scheme is contrived after the positions of the principal borders have been determined will depend upon circumstances and the fancy of the garden maker. If the garden is of considerable length it may be advisable to divert the path before it has traversed the full extent of the plot. How this may be done without sacrificing the welfare of the flowers, and with best results to the garden picture, will appear hereafter. I mention it here as one of the legitimate devices for securing a desirable quality in the plan. The introduction of detached beds also is a matter in which the taste of the designer must be his most trustworthy guide.

An expedient I have often employed is to allow the path to expand into a square at some point of its length, and to install a square bed in its centre. This is a very convenient device when it is required to effect a slight

deviation in the path without altering its direction, as the path may enter the square at one corner, and leave it by the diagonally opposite corner. (Fig. 4.) Beds in grass, when set near its boundary, should be allowed a verge of at least eighteen inches, to prevent difficulties in mowing. The use of circles and parts of circles, as well as of figures in which the angles are equal and not less than a right angle — the hexagon, for example — is not opposed to the rectilinear system of treatment. They become mere details, in no special way related to the leading lines of the garden plan.

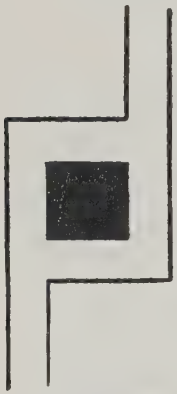


Fig. 4.— Expansion of path

Though the principal borders should usurp the best position in the garden, there is no reason why the gardener should not make a border in the shade, where he may grow such plants as thrive best under that condition. The foot of a southern boundary fence is well suited for a shady border, because it is warm as well as shady. Ferns, lily-of-the-valley,

and Solomon's Seal would thrive in such a border, as well as a multitude of other plants.

When the house does not stand squarely within its boundaries, or when the garden boundaries are straight but not rectangular, as in a plot which tapers in the direction of its length, the problem requires some special consideration; but usually means may be devised to bring the garden details into harmony with these disconcerting factors, as a perusal of some of the plans in Chapter XX will show.

I have said that the paths exist for utility. That is so in a large measure, but they have a further value, in linking together the other elements of the garden. Moreover, a path is an objective invitation to walk through the garden and enjoy its beauties. A garden without a path would hardly satisfy the eye. On the other hand, nothing is so wasteful of space, or so irritating to the eye, as a multitude of paths cutting up the garden into small compartments and destroying the breadth of the picture.

There are two principal points in every path, or should be — the beginning and the end. Paths which start nowhere and end at a blank

wall suggest purposelessness. It may be taken as an axiom that the principal path should commence at some point conveniently near, and preferably facing, the door by which the house inmates enter their garden. Its direction should be through the flowers, and it should have a natural termination, or final destination. The best terminal to a garden path in my opinion is the summer house, and when that feature is non-existent, an arbour, or some other erection, should serve the purpose. Failing that, the path might terminate in a square expansion, in which a seat, sundial, or other appropriate object might be placed. It would be better to end it at a tool house or garage, or even at a potting-shed, than to allow it to stop suddenly nowhere.

All deviations in the direction of the path should be made at right angles. Diagonal paths are not permissible. They never look well in a small garden.

The value of a path is mainly in proportion to its utility. After rain or heavy dew the garden would be uninviting without a path. It also preserves the turf from traffic, which would soon wear it to bareness. This sums

up the path's usefulness. That it has also a certain value in the general picture I have already conceded. I have seen it laid down in handbooks on gardening that the smaller the garden the more the need for the "winding path," which, it is claimed, adds to the "apparent length of the garden." I cannot conceive that any such result could follow in a garden the boundaries of which are visible on every side. The winding path in a small plot serves only to cut up the space into irregularly shaped areas, the treatment of which will tax the skill of the planner to deal with successfully, whilst the additional amount of gravel surface is so much deducted from what might be made productive flower ground.

The width of the path must bear some relation to the scale of the garden. In comparatively small plots, economy of space suggests that it should be the minimum compatible with its purpose. I do not favour a less width than three feet for a principal path under any circumstances.

In larger gardens greater width may be permitted, as there is a certain distinction and dignity in a broad walk when all else is in

proportion. In a half-acre plot a width of five feet might be desirable.

The practical details of path making will be treated in a separate chapter, but I may here refer to the path material, more particularly as regards its colour and texture. Red gravel, coarse sand, bricks, and tiles are warm in tone, contrasting well with the grass and harmonizing with the flowers and their foliage. Granite chips, cinders, tarred gravel, blue stone, and cement are cold and uninviting, and should only be used when other materials are unobtainable.

Red gravel (of the right kind, which binds well), bricks, tiles, tarred gravel, and cement make paths with a close, hard surface. Sand or pebbles, stone chips, cinders, and blue stone never bind thoroughly, and therefore make paths with a loose surface, which, apart from the unpleasant feeling underfoot, implies that much loose material will adhere to the boots and be carried on to the grass, with disastrous results to the knives of the mower.

Though paths, as a rule, should be made of equal width throughout, it is sometimes

advisable when they are of any great length, and particularly if straight, to introduce at

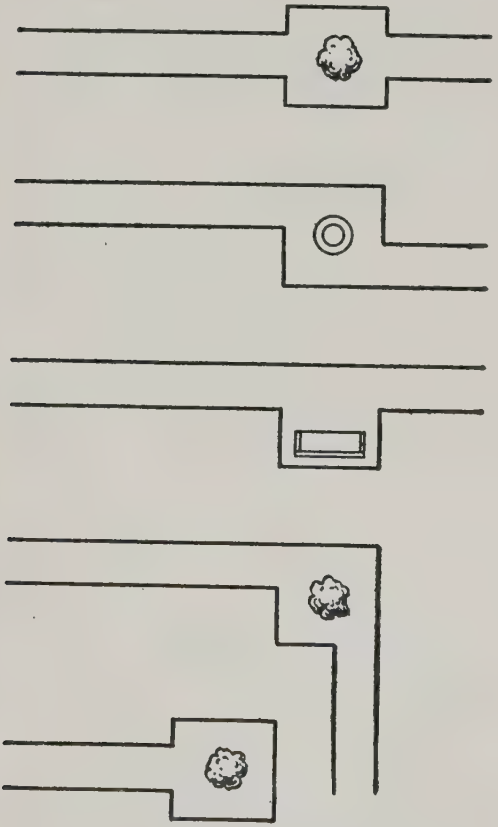


Fig. 5.— Expansion of path

some suitable point an expansion in width to break the line.

This should be done in one of the ways indicated in the illustration (Fig. 5). These expansions may be utilized to accommodate garden seats, sundials, vases or tubs, trees

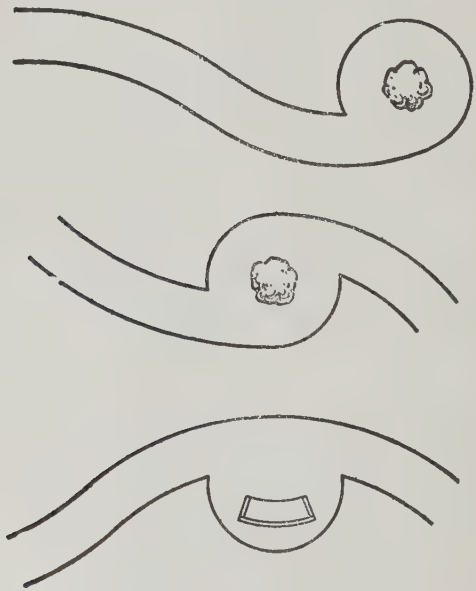


Fig. 6.— Expansion of path

or beds, so as not to appear quite purposeless.

Expansions of the kind indicated are well placed at points where a secondary path breaks

off from the principal one; also at the terminal of a path, as already mentioned.

In winding paths they would take a form more in harmony with the lines of the path, as the examples illustrated in Fig. 6 show.

Although the rectilinear system, as adapted to small gardens, demands that path offshoots should be made to leave the path at right angles, the same does not apply to curved paths, in which all by-paths must leave the main path at a more or less acute angle, the curves of both being laid down to form a pleasing combination of lines, thus:

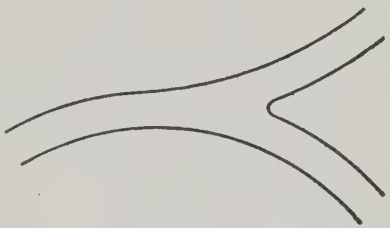


Fig. 7.— Path junction

The dictum of a distinguished landscape gardener on this question may be taken as an axiom. Repton, as quoted by Mawson, says: "When two walks diverge from each other they should not appear as if they were intended to join again, but rather as if each led to points far apart."

The use of curved paths, though inadmissible

in small plots, is quite legitimate and even desirable in plots of larger size, and I may therefore offer some guidance for laying them out.

Curves should be set out in good, bold sweeps. Grace of line is only to be obtained by a practised eye guided by an intuitive sense of what is pleasing, so that the best achievements in this direction are usually the result of skill, knowledge, and artistic instinct. A hint may be given as to what should be avoided.

Thus the curve A in the illustration (Fig. 8) is better than B.

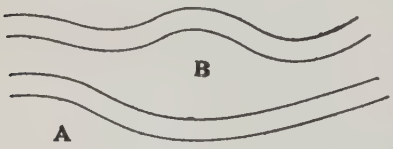


Fig. 8.— Curves in paths

Mr. Mawson in his admirable book, "The Art and Craft of Garden Making," says of garden walks: "They should be arranged in such a way that the beauties of the place may be exhibited, not by a series of wriggles, but in a simple straightforward manner."

As a rule, these curves are best not modelled on a geometrical basis,—i. e., one in which parts of circles do duty as their components. It is

better that they should have that flowing character of which we find the counterpart in nature in the graceful lines of a bending sedge or the curved stem of a flower spike. Thus the planner should rely on freehand rather than the compasses.

In laying down such a curved path the novice is too apt to overlook the spaces to right and left. He should ever bear in mind that his walks subdivide the garden space, and on the course they take will depend the shape of the areas they bound or enclose. Thus in the case of a path skirting the garden boundary the amount and shape of the space between it and the boundary fence must be considered. For instance, it would be bad practice to leave a strip too wide for a border but too narrow to carry a border with grass in front of it.

I now pass on to the third element in the garden plan — the grass. From the foregoing it will be seen how closely correlated it is with the other factors.

In small gardens it is best to confine the grass to a single area, though circumstances may arise to make it desirable to depart from this rule. In such event the second grass

space should be subordinate to the principal one, and if possible reserved for a separate purpose. To bisect the garden into two equal areas of grass is at once to introduce symmetry. The artist well knows how fatal it is to a good pictorial effect to allot equal spaces to sky and landscape. The two cases are parallel.

In gardens of the size I am now considering the idea of a "lawn" for games is rarely realizable for want of space, and the grass plot, therefore, should be treated with other purposes in view. Its functions are more closely related to the flowers and general picture. It affords welcome relief to the eye, and by contrast enhances the value of the colour effect obtainable with the flowers. Moreover, its surface presents a cool, soft, and welcome tread, and a place to "laze" upon and enjoy the garden vistas.

It is that part of the garden in which we may plant a few trees for shade, without fear that their shadows and hungry roots will work havoc with the flowers. The grass plot should never be isolated by surrounding it on all sides with gravel, as too often is done in the type of garden illustrated in Fig. 3A, the

garden with a circuit path so beloved by suburban dwellers. Let one or more of the sides join a border, where grass and flowers would come into juxtaposition. Even let the border thrust out an extension into the grass in the manner suggested in the early

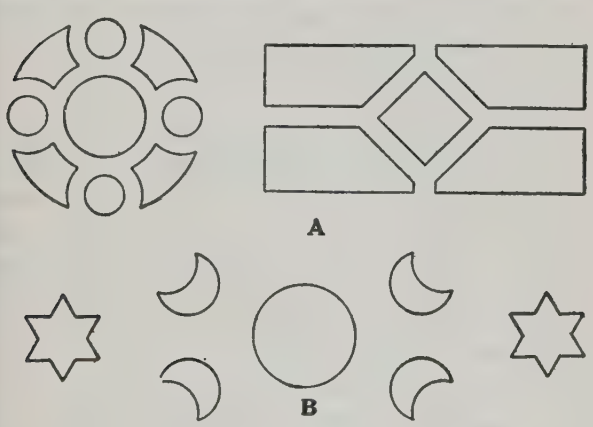


Fig. 9.— The grouping of beds

part of this chapter. But beware of fretting your principal grass plot into a thing of ragged outline by overdoing this procedure, and do not pierce it with a multitude of little beds. Remember also that the simpler in shape your grass plot, the less difficulty you will experience in mowing it and keeping it trim and neat.

Beds in grass are best grouped at one or two points, and the components of the group should be shaped so as to produce unity of effect. Compare the two examples illustrated on page 65 (A correctly grouped, B incorrectly grouped).

It is generally better that the outlines of the group should preserve a parallelism with those of the grass plot, as this ensures a more harmonious effect.

From what I have written about the importance of making aspect the guiding factor in garden design, it is clear that the gardener should contrive, as far as possible, that the principal shadows in his garden should fall upon the grass, where they will be welcome as shade, and will not preclude the growth of good turf. Small detached grass spaces, if unavoidable, may be made interesting by planting them with bulbs, thereby securing a charming feature in spring and early summer. Another plan is to utilize the space for a sunken rock garden, and yet another is to make a central group of beds upon it, which in the case of a square space becomes an attractive secondary focus.

An important point is to give proper access

to all grass spaces. This implies that the borders should not bar the way which appears to be the most natural one of reaching the grass. Neglect of this consideration may tempt those who use the garden to skip over the borders, with consequences to the plants which I need not particularize. It is well to provide means of access to the grass at all points from which it is likely to be approached, by bringing it up to the path at those points. This is done by curtailing the border some three or four feet at its end, or by breaking through it at some point in its length. Many examples illustrating this suggestion will be found in the plans.

When a grass plot is used solely as a background for a group of beds, ample verge should be left at the edges, and, whatever the shape of the beds, the spaces between bed and bed should be of sufficient width to ensure no difficulty in mowing.

In dealing with grass spaces of irregular outline, such as would occur where the paths are winding, the placing of the beds should take into account the outline of the grass space. For instance, a square group of beds set in a

curved promontory would produce a discordant note. Better to adapt the shape of the group to the space in which it is set.

The two methods are here illustrated for the sake of comparison, and a glance at the figures

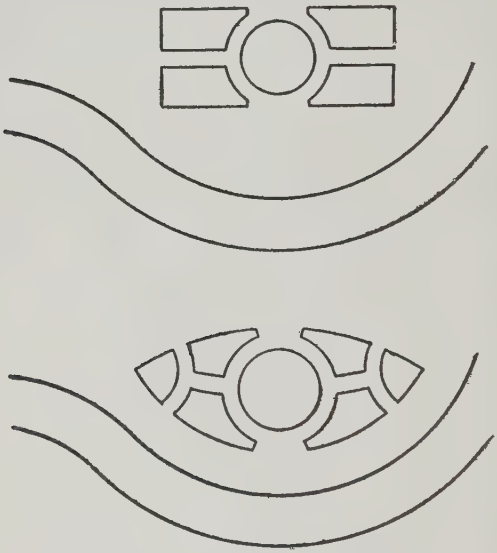


Fig. 10.— Correct form for groups of beds

will sufficiently convince the reader as to which method is most likely to please the eye.

There is no need to make the grass *level* if the ground has a natural slope, provided,

of course, "King Tennis" does not rule. On the contrary, sloping ground greatly assists drainage, and ensures that puddles shall not lodge on the surface, which, on heavy ground, would inevitably occur on a dead-level plot.

CHAPTER VI

Making Beds and Borders

Being intended solely for the purpose of accommodating living plants, beds and borders should be made so that they will furnish everything that a plant demands of the soil. This implies not only that the soil shall be of such a nature as to supply abundant food for the roots, but that it shall be of sufficient depth and of proper consistency, and that it shall contain no undesirable constituents.

Soils are as we find them, and not always as we would have them, so that the gardener who, by force of circumstances, has to till an intractable soil, must adopt artificial means to bring it into a better condition. Reference has already been made to the subject in Chapter II.

Let us assume that the gardener is breaking virgin ground, say a piece of old pasture. He has staked out the main lines of his garden plan,

and is about to make his beds and borders. The soil consists of a top-spit of brown loam overlying a clayey subsoil. If the latter is a stiff clay, and insufficient surface soil overlies it, the gardener may have to face the necessity of importing additional material. But let us assume that the consistency of the subsoil is not so hopeless as the above assumption would imply. Then the proper procedure is to bring soil and subsoil into intimate admixture, so that one may temper the other, and to do so to such a depth as the ordinary requirements of horticulture demand. In most circumstances this may be taken as two feet or thereabout. This is best done by the operation known as "trenching," now to be explained.

It may be well here to state that trenching is a term applied strictly to spade work which has for its object deep tillage, as distinguished from "digging," by which the surface layer of the soil only is turned over.

Trenching is best done in the late fall months when the weather is yet open. It is conducted in various ways according to the results required and to the previous condition of the

ground. In "full-trenching" the process has the effect of reversing the relative positions of the upper and lower layers of soil, so that that which was situated, say, two feet below the surface comes to the top, and the top layer goes to the lower level.

So complete a reversal may be admirable treatment for ground which has long been in tillage, and therefore already broken up to the trenching depth, but it would be inadvisable in the case of new ground such as we are considering, the subsoil of which had not seen the light perhaps for centuries. On such ground the subsoil would be compacted and wanting entirely in the constituents which furnish food for plants. It is clear, therefore, that if full-trenching were adopted the gardener would have a very poor surface layer in which to grow his flowers.

A better plan would be to "half-trench," which consists in removing the surface soil in sections, then breaking up the subsoil with a fork, and subsequently replacing the surface soil. But there is still a better method for the garden maker, designed to effect the more or less complete mixing of the soil and subsoil

to the desired depth. As that is the principal object he should have in view, this last method is the one for him to adopt. The operation is conducted as follows:

The ground is opened up to the full depth by a trench cut across the border, as shown

Fig. 11.— Trenching

by the full line in the illustration, which represents the trench in cross-section. The soil removed may at once be carried to a position near the far end of the border. The gardener then proceeds to fill up the trench at A with soil taken alternately from B and C, D and E, and so on till he reaches the end of the border, when the space left must be filled in with the soil that has been taken there for the purpose.

If the land is old pasture, care should be taken to bury the turfs, so they may in due time rot

and thereby contribute their quota to enriching the soil.

Although the primary object of trenching is to produce a workable soil of sufficient depth, incidentally assisting drainage and effecting aeration, it affords a good opportunity for enriching the soil by incorporating with it a proportion of manure. In the making of beds and borders in a new garden this opportunity should not be neglected. Therefore the gardener should have at hand a heap of good manure, and as the work proceeds he should add it to the soil at a regular rate, until the whole contents of the border has been treated. This must be done in a manner which ensures that the manure be well distributed in depth, not merely added to the surface layer, so that when the plants send down their roots they will find a reserve of food awaiting them.

Once made in this way, the border will not need trenching again for some years. The annual digging and manuring will serve to keep it in efficient condition for a period dependent upon the demands made upon it.

It should be remembered that when we have

planted, and the plants have become established in the borders, it is not possible to resort to trenching again without removing all the plants; hence the necessity for doing the work thoroughly in the first instance.

With beds and groups of beds of compact shape, trenching as just described is hardly practicable. The better method is first to remove the top-spit over the whole surface of the bed, heaping it close at hand; then to do the same with the lower layer, making a separate heap of it; after which the bottom should be forked over and the soil thrown back, mixing well together that from the two separate heaps. A due proportion of manure should be added, as in ordinary trenching.

Thus far these directions apply to soils which are naturally well fitted for the gardener. With too light or too heavy soils some tempering material must be added, and this is best done when the beds and borders are being formed.

On heavy clay soils we may use sand, fine gravel, ashes, and vegetable matter. It is an excellent plan, not often adopted, I fear, to make the lowest layer of brick rubbish, with ashes overlying.

This ensures good drainage. At least two feet of soil should be put above the drainage layer. The cost and trouble may be more, but the results will repay the gardener.

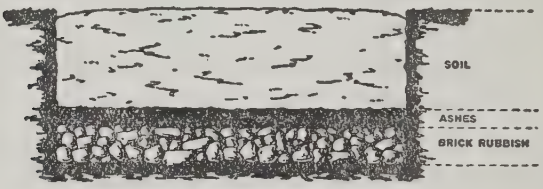


Fig. 12.— Drainage for beds and borders

Borders prepared in this way do not suffer from water-logging even during wet winters. In hot summer weather they neither bake nor become dry for any great distance down. If the trenching is done in the autumn, the winter frosts will help to break up the clay lumps, reducing them to a consistency more nearly approaching loam. The important point in the treatment of clay land is to secure a sufficient admixture of loose porous material to destroy the tenacity of the clay and to permit of moisture freely finding its way down through the mass of soil. A certain proportion of vegetable matter is a gain, as it has manurial value. Hence the gardener may cast into his

trench turfs, weeds, and garden and house refuse, which in due time will rot and supply humus.

On light soils, which usually owe their lightness to an undue amount of sand, or may consist almost entirely of sand, we may add stiff loam and clay to give it greater body and a more retentive character. As such soils are usually deficient in humus, vegetable matter also may be added with advantage.

Whether the treatment is designed to render a heavy soil lighter or a light one heavier, the aim of the garden maker should be to sec re a well-drained bed or border, the soil of which, to a depth of at least two feet, is of a workable consistency and not likely to suffer from extremes of weather, either in the direction of drought or continued wet.

Such a soil will admit air as easily as it admits moisture, and air performs a very important function in "sweetening" and purifying the soil, by hastening those processes of decomposition which are always taking place.

In soils of the heaviest kind it may be necessary to introduce subsoil drainage by means of agricultural tile, or rubble drains

laid at regular intervals, but the gardener would be wise to avoid land which could be rendered workable only by such means. Drainage in that case would have to be carried out over the whole of the ground and not merely beneath the borders.

On stony land the operation of trenching affords a good opportunity for removing an excess of stones. I do not recommend screening, unless a very coarse screen is employed, because a certain proportion of stones is an advantage to the soil, helping to keep it loose and workable. It is therefore generally advisable to throw out the larger stones only.

There cannot be two opinions about the wisdom of deep working, and it only needs to be tried and the results noted to impress the most sceptical gardener of its value.

I now pass on to a consideration of the form and disposition of beds as picturesque elements in the garden. I need add nothing to what I have already said about borders, because their position generally determines their form, and aspect decides their position. I used the term "bed" to distinguish a detached compartment for flower growing. Beds are

most often formed in turf. Sometimes, however, they are given a background of gravel, particularly when a formal effect is desired.

Whatever the background, the form of bed, as regards its outline, is important, and it is essential that we should not outrage good taste by indulging in anything of eccentric character. I have already pointed out the disadvantages from a practical standpoint of such shapes as crescents, stars, and other figures having acute angles. Did not these practical objections count, I should still decry these shapes because of their obvious artificiality. The outlines by which we bound our flower beds should not be of a character to fix the eye and divert our attention from the flowers. Another objection to these bizarre shapes is the great aggregate length of their boundaries in comparison with the space they enclose. This disproportion means that the actual length of edging to be kept trimmed and cared for is much greater than is necessary, and where beds of this kind exist in numbers the extra labour is not negligible.

To take a concrete case, the boundary length

of a five-pointed star, as shown in the illustration, compares with that of a circle of the same diameter as five to three.

A circle, it is well known, encloses the largest amount of space in relation to its circumference, and is therefore the figure which has the smallest length of boundary. The octagon, hexagon, and pentagon come next in economy of boundary, and the square and rectangle

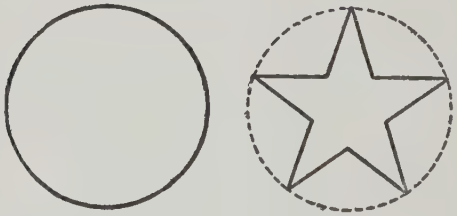


Fig. 13.— Shapes of beds

follow. If the gardener goes beyond these simple shapes he will necessarily become lavish of edging. I do not mean to say that he is on that account to confine himself to those shapes alone. We must have variety in form and scope for fancy. It is well, however, to have our eyes open to the consequences of indulging in sprawling and attenuated

forms, which are prodigal of margin but enclose comparatively little flower space.

Of the forms of bed in general use, and admissible on practical and artistic grounds, I give some examples, omitting the circle, square, and rectangle as sufficiently indicated by their names.

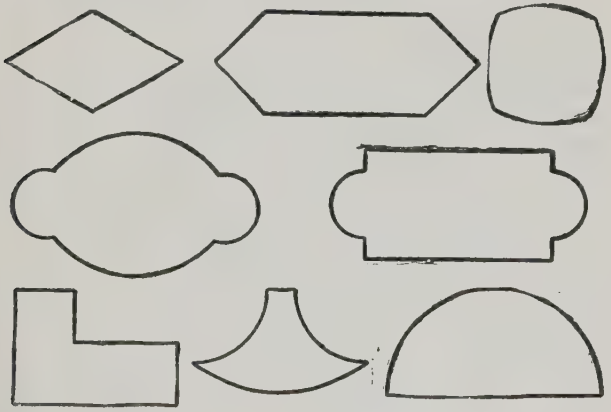


Fig. 14— Shapes of beds

It is obvious that some of these are suitable only as components of a group, by reason of their unsymmetrical character.

Beds are placed either singly or in groups. In the former case it is well to select a shape which bears some relation to the outlines of

the grass on which it is placed, if it comes sufficiently near those outlines for it to matter. A square bed set in an oval grass plot would not harmonize so well with its outline as a circular or oval bed, as I have already pointed out in connection with groups of beds. So in a square or rectangular plot of limited dimensions a square or rectangular bed would best please the eye.

In designing a group of beds it is not sufficient to throw together several components bearing no relation to each other in shape. On the contrary, there should be a rigid harmony in shape between the components. This is best secured by giving attention to the strips of sward or gravel which separate them, and a good rule is to make these strips of equal width throughout their length, so that the sides of adjacent beds are parallel with each other.

This is made clear in the next illustration. Practical considerations in connection with mowing make it desirable that this strip of sward should not be too narrow, say not less than eighteen inches. In groups of beds in gravel, the separating strips become possible paths,

and their minimum width may therefore be fixed at two feet.

Examples of groups of flower beds will be found in plenty in the garden plans in a later chapter.

As regards the size of a bed, or of the com-

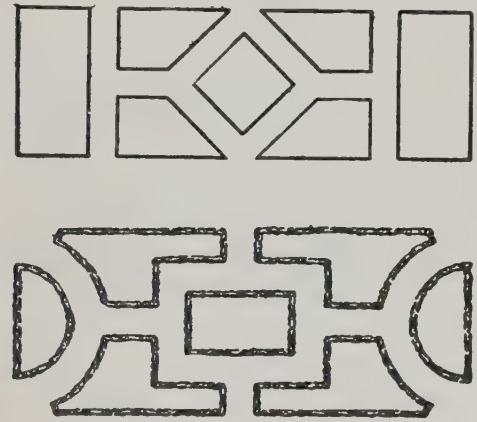


Fig. 15.— Relation between beds in a group

ponents of a group, no precise limits can be laid down. A bed may consist of a square measuring two feet each way, if intended to accommodate a pillar rose. On the other hand, very large beds are sometimes introduced, when they are in scale with their surroundings and

a bold effect is aimed at. In most cases, however, nothing is gained by making a bed of greater area than is represented by a circle of twelve feet diameter.

In groups of beds it is well to have a central component which dominates the group. But too great disparity in size between it and those about it is not desirable.

When a series of groups is to be made, as, for instance, along the grass bordering a drive, the same design should not be repeated indefinitely. It is better to repeat it, if at all, at considerable intervals, employing other designs in between. The same applies to a series of single beds, though monotony is not so noticeable in that case, particularly if the form employed is a simple one. For instance, a series of equal and similar rectangular beds bordering a long straight stretch of grass may be quite inoffensive, but even in that case it would be better to break the line at equal distances by making a wider interval between adjacent beds at every third or fourth bed, thus introducing a simple kind of grouping, which always looks better than a regular series like the cars of a freight train.

The gardener has always to consider the trouble involved in maintaining the shapes of his beds, and this should make him cautious about indulging in figures the geometry of which is not very obvious. With rectangular beds the stretched cord is always a sure guide for the turf trimmer, and with circular beds, or those bounded by straight lines and parts of a circle, the radius cord attached to a stake at the centre of curvature is a simple expedient for controlling the shape. It is otherwise with "fancy" shapes, when the eye alone can be called upon to keep things right.

Opinions differ on the question of camber in the surface of the soil, if we may judge by examples, some preferring to keep the surface flat, and others to heap it up until the bed takes on the semblance of a gigantic pincushion. Safety lies in the happy medium. Some camber is desirable as a means for throwing off the water during heavy showers, and it improves the appearance of the flowers, particularly when they are all of a height, as in bedding practice. Excessive camber tends to drain off the moisture from the crown of the bed.

Beds in gravel, if edged with box, should be kept nearly flat on the surface, otherwise the moisture which gravitates to their margins would prove uncongenial to the box plants, and would also carry soil out upon the gravel surface.

CHAPTER VII

Construction of Walks and Drives

The first essential in a garden path is that it should present a firm surface, durable under the ordinary conditions of the traffic it has to bear, which, be it remembered, includes not only foot traffic, but the passage of roller, mower, and garden barrow.

It must also be well drained, so that after showers its surface does not hold puddles or long remain wet.

There is no detail in the garden which contributes more materially to its general good appearance and to the comfort of its users than a well-made and well-kept path.

Drives designed for carriage traffic may also be referred to in this chapter, as practically the same principles of construction apply to them, though if much used by wheeled vehicles and not merely for show, the surface material must be such as will not cut up in daily use;

in fact, their making should involve the ordinary principles of road construction.

In laying down the line of a drive, if any departure is made from the straight, the curves should make wide sweeps. Abrupt turns in carriage drives are apt to lead to unlooked-for surprises on dark nights.

The minimum width for a drive may be taken as ten feet.

There are two points in a drive which call for special attention on the part of the designer, viz., the entrance and the terminal. If the drive enters the plot at right angles, it is well to set the gates back from the road, so as to make space for vehicles to turn, and this is especially necessary when the drive leaves a narrow thoroughfare. It is usually done by making the railings or boundary hedge curve inward toward the gates, or curved wing walls may be erected enclosing a space approximating a semicircle.

When the drive enters the plot at an angle it should break away from the thoroughfare by a curve which meets the latter at a tangent, or if from a curved thoroughfare, the two curves should flow gracefully into each other; in other

words, they should have a common tangent line.

It is not unusual to find the course of a drive so laid down that its length is unnecessarily great, the idea being that it impresses the visitor. This is a waste of material and of space.

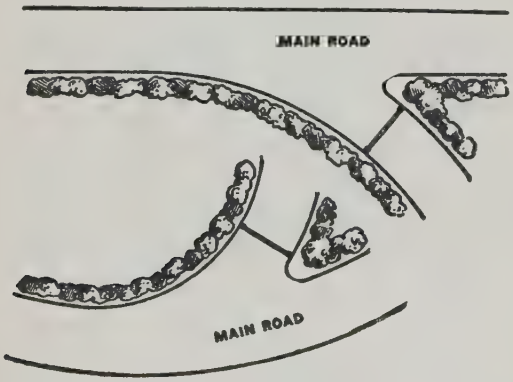


Fig. 16.— Entrance to drive

On level ground a straight drive leading to the house by the shortest route is generally the best. Curved drives, however, are not objectionable provided their lines run in bold sweeps, and they may afford an opportunity for screening the house when privacy is desirable.

On sloping ground the course of the drive

must be determined with a view to ensuring an easy gradient, and in such case it may be necessary to use curves freely.

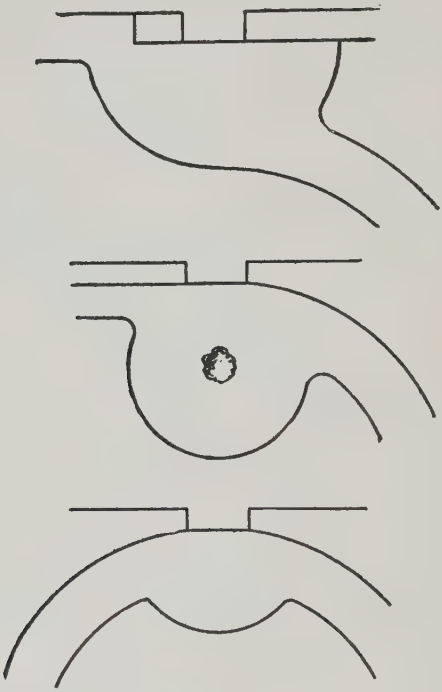


Fig. 17.— The carriage-turn

Where the drive reaches the house entrance an expansion should be made to permit of vehicles turning, and it should be wide enough

to allow them to turn on a sufficiently large radius to prevent damage to the road surface. The form of the "carriage-turn" is immaterial if it is large enough; but if space is restricted it is better to adopt the circle, or some figure approximating it.

In the case of a semicircular drive having separate entrance and exit gates, the carriage-turn is unnecessary, but may be retained in some form as a concession to the eye, which naturally looks for a free space opposite the house door.

I have said that the actual construction of the drive is a question of ordinary road making, and it need not therefore be detailed here. It is only necessary to warn the road maker against the use of improper materials. He should excavate to sufficient depth to permit of a rubble basis, use the best metalling his district affords, and see that it is laid with sufficient camber to throw off the rain-water. On impervious soils it may be necessary to put in rubble or tile drains at the sides.

I now pass on to paths.

Gravel Paths — Much depends upon the quality of the gravel. There are gravels which

are little better than shingle, being almost or entirely devoid of binding material. Gravels of this kind will never make a firm path, and a path of loose pebbles is objectionable on account of the liability of the smaller stones to be carried on to the grass.

The best gravel has a definite proportion of a clay-like constituent, probably containing iron oxide, which forms a natural cement, and ensures that the path becomes duly compacted under the roller. The presence of this constituent is readily detected by the eye and finger in handling. Moreover, it is mainly the cause of the red colour, so that the path maker should be suspicious of pale-coloured gravel.

Let us now follow the process of making. After staking out the course of the path, the soil must be excavated to a depth of twelve inches, or until a firm bottom is reached, and taken bodily away. The gardener will be sure to have a use for it. The trench must then be filled in with rubble, brick rubbish, or other light material, to provide drainage and to ensure a firm foundation.

Over this may be put a layer of shingle or

coarse gravel screenings, say three inches thick, which should be formed with the rake to a curved surface or camber in cross-section. The gravel may then be evenly distributed over the surface to a depth of from two to three inches, care being taken to keep the line of its

Fig. 18.— Path foundation

crown straight in the direction of the path's length, but preserving the camber of the layer beneath. After liberal watering the roller should be put to work. The free use of water at this stage is important to success, as it ensures the subsequent consolidation of the gravel and prevents it adhering to the roller. The correct amount of water may be determined by noting the action of the roller, which should carry before it a wave of creamy liquid, a mixture of water with the binding constituent of the gravel. The roller should be a moderately heavy one. After the path has been brought to a fair surface it should be left unused for at least twenty-four hours, and if no rain falls

during that interval so much the better. The whole operation is a simple one, involving no pitfalls for the inexperienced if these directions be faithfully followed.

Cinder Paths — These are dismal things in the flower garden, though they have a sphere of usefulness in the vegetable plot. They also may be made as directed for gravel paths.

Tar Paths — When well made these are very durable, but their colour is against them, and in hot weather they are apt to become soft on the surface; the same applies to asphalt. I have, however, seen tar paths the stony constituent of which was a gray material, probably limestone, not altogether unsightly after the surface layer of tar had disappeared.

Tar and other paths made of impervious material should not be flanked by impervious tiles, or water will collect at their sides.

Cement Paths — These are unsympathetic in colour and liable to crack under the influence of frost. To guard against cracking a good proportion of sand should be used in mixture, and the path should be laid on a concrete basis at least six inches thick. Cement may be

coloured with iron oxide (red ochre) to give it a warmer and more genial hue.

Brick Paths — Next to gravel the brick path holds first place: indeed, in my opinion, it is preferable to a gravel path in most circumstances, its only drawback being its want of flexibility, which unfits it for use in curved lines. Its advantages are the ease with which it may be kept free from weeds, its durability, good colour, and the opportunity it offers for artistic effect. In gardening, the old order of things dies hard, and gardeners are shy of adopting anything savouring of novelty. Yet the brick path is not altogether a thing of to-day. It may be met with in many old gardens, its cheery red surface worn into hollows, but ever dry owing to the porous nature of its material. From this observation we may take a hint, and, if we decide upon a brick path, be careful to obtain bricks of a kind which are not impervious to water. They may readily be tested by plunging one into a pail of water and noting the speed with which the surface water disappears after it has been lifted out again. In point of cost, brick paths do not compare unfavourably with gravel, but much depends

upon the price of each material ruling in the district. The average price per thousand of bricks suitable for the purpose may be taken at $7.50 delivered on the ground, and a thousand bricks will cover a surface of about two hundred and seventy square feet, sufficient for a ninety-foot length of path three feet wide. For the purpose of comparison it may be assumed that a load of gravel costing $1.75, laid three inches thick, will cover one hundred and eight square feet of surface, thus bringing out the relative cost of material at $7.50 for the brick against $4.50 for the gravel. This, at first glance, appears to be in favour of gravel, but another factor has to be reckoned with, viz., edging tiles, which are not required for the brick path. These cost about $3.25 per hundred, and they measure about nine inches, so that, if our ninety-foot path has to be edged on both sides, some two hundred and fifty tiles will be required, costing $8.12. The comparison may therefore be stated thus:

90 feet of brick path . . .	$ 7.50
90 feet of gravel path and edging tiles	12.62

This takes no account of labour, and the preparatory work and materials for the path

foundation. The two latter would be the same for brick as for gravel, but the labour would be rather more for laying the bricks, as compared for putting down and firming the gravel, but hardly sufficient to turn the balance the other way. I have gone into figures in detail, because I find the impression pretty general that a brick path must be a costly affair. The quality of brick I have found suitable is one sold as "seconds wire-cut." Its colour is light red, but it darkens when soaked with moisture from the soil.

A rubble foundation is prepared as for a gravel path, and dressed over with finer material, over which is put a layer of finely screened gravel or builder's sand, which must be raked to a level surface. The good appearance of brick paths would be marred if any perceptible camber were given to the surface, but on dead-level ground there may be half an inch difference of level between the sides and centre of a three-foot path. This is quite sufficient to throw off the rain.

The bricks should be laid flat upon the sand without mortar or cement, pressed down firmly and into close contact, and kept in true line

by the use of a stretched cord. It is best to commence by laying the marginal bricks on one side from end to end, and to select the side which comes against turf, as that helps to keep the bricks in place.

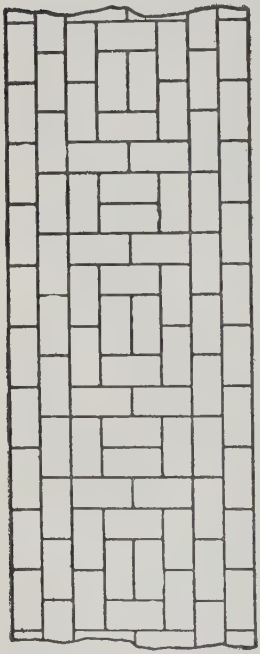


Fig. 19.—Design for brick path

All bricks are more or less curved in the burning. The concave side is easily detected by glancing along the edge, and should be laid downward, otherwise the bricks will acquire a tendency to rock and become loose.

Having laid the path margin on one side, and made sure that it is straight and true from end to end, the centre may be built up to it, but before proceeding with this some idea must be formed of how the bricks are to be disposed. They may be laid in parallel lines, breaking joints, which is the simplest plan, and produces a neat if not

ambitious effect, or a pattern may be worked out on some such lines as indicated in the illustration. In this it will be seen that whole bricks are used throughout. It is not desirable to adopt a pattern which involves much cutting of bricks, because of the difficulty of making neat joints with the cut ends.

If the centre part is well laid, the other marginal line of bricks will lie neatly along its free side and complete the path.

In bedding the bricks upon their seating the sand may be added to or removed, as occasion requires, to bring the upper surface of the bricks to the general level. The principal precaution needed is to bed each brick firmly, so that no subsequent subsidence of individual bricks can occur.

If preferred, the marginal bricks may be laid on edge, to stand, say, about two inches above the level of the centre, but that practice is not conducive to efficient drainage.

I have pointed out that the brick path can dispense with edging tiles, but to make it serve the purpose of the tile edging it must be

brought into proper relation with the ground on either side.

That is best done by adopting the rule of making the level of the path at its edges the same as that of the turf (when it skirts a grass plot), and an inch and a half higher than the edge of the border when it comes against the soil. This is shown in the sectional illustration.

Fig. 20.— Section of brick path

The weight of the bricks keeps them in place, but it is well to compact the soil of the border where it comes against the path by ramming, to ensure that the bricks on that side do not get out of place. In the case of very light soils I have found it desirable to push a few slates down into the soil at the outer margin of the path, burying them as far as the soil level. If this is done at every fourth brick, and at a joint, the whole is made fairly secure. Grouting with cement would perhaps be a safer expedient, but I have not found it necessary.

On sloping ground, where the slope crosses the path, the latter may continue the natural slope of the ground, and it should be made

quite flat* on the surface, so that water may drain off at the lower margin.

When the bricks have been laid the joints may be filled up with loose sand, watered to carry it down, and again filled up to a level with the surface.

Whatever ideas the gardener may have about pattern-making, he should not allow his fancy to run away with him. Over-elaboration of pattern in so utilitarian a feature as a garden path would be too assertive. The simpler the design the better, though undue repetition is not desirable.

Bearing in mind the fact that bricks measure four inches in width, it is evident that the path width must be a multiple of that dimension, a fact to be remembered when the width of the path is being settled.

Composite Paths — In this category I include all paths in which bricks or tiles are used in combination with concrete, stone mosaics, cobble stones, and other like materials. I shall first refer to those in which bricks are

*To avoid misapprehension I may say that I use the words "flat" and "level" in their strictly separate senses. An inclined path may be flat but is not level. A level path is flat of necessity.

used for the framework. The preparation of the foundation is the same as for an all-brick path, except that sand will only be needed where the bricks come.

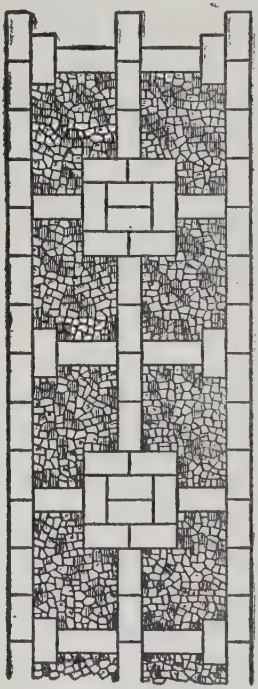


Fig. 21.—Design for a composite path

The general idea of a path of this character may be gathered from the illustration.

It will be seen that the brickwork forms the basis of a pattern, which is completed by filling the spaces between its members with another material. I have found road macadam an excellent one, and I use it as follows: having made a mortar of builder's sand and Portland cement, half and half, I fill in the spaces one at a time, first with an inch and a half of fine gravel, and then to the path level with mortar

Whilst the latter is soft I insert the macadam cubes, fitting them closely into contact and pressing them down, but leaving their upper sides slightly higher than the bricks. When the space is filled I go over it with a board and a mallet, beating down the cubes until they are all level with the bricks. The exuding mortar is transferred to the next space, and that one similarly treated until the whole path is finished. After allowing an hour for the mortar to partly set, the path surface may be washed over with a stiff brush and clean water, to remove the mortar which clings to the top of the stone cubes. In twelve hours the path will be set and as firm as a rock, the mortar used for the mosaic work taking hold of the bricks and tying the whole together.

A plan less satisfactory on the score of appearance is to fill in the spaces with cement concrete, finishing with a rendering of cement.

Cobble stones make an excellent filling, and give quite an old-world appearance to a path. They should be laid on end in dry sand, levelled by the use of the board and mallet, and then grouted with liquid cement poured amongst

them from a pail until it rises above the middle of the pebbles.

Another mode of filling is to use coarse rubble blocks, setting them in mortar with the aid of a builder's trowel.

Similar paths may be made by substituting tiles for bricks. The expense is greater and more skill is required in the setting, which must be done on a bed of mortar. I do not think that anything is to be said in favour of tiles instead of bricks. They are less porous, and therefore do not dry so quickly. They are also more liable to be dislodged and broken.

Tile Paths—All-tile paths used to be in favour in some suburban fore-courts, and frequently offended by reason of the violent contrasts in the colour of the tiles. A path of hard red tiles in large squares, or of oven tiles, is not displeasing, but is not economical where paths are long.

Another disadvantage of the tile path is that the edging tile cannot be dispensed with.

Stone Paths — Flagstones are occasionally met with in old gardens. I do not favour them for many reasons. One is that one cannot help associating them with the flagged

pavements of town; another that their colour is too cold to the critical eye; yet another that they wear unequally and soon become "dished," giving rise to the inevitable puddle.

I have seen some good paths made of stone waste, and if the gardener has the opportunity of obtaining this material cheaply, and it is of the right kind — i. e., not too friable — it will make an interesting path.

A good plan is to use it in a patchwork pattern of the kind our lady friends call "crazy," for which purpose all sharp angles should be removed from the pieces. I give an illustration that will carry a suggestion for a stone-waste path based upon Japanese practice. If the separate stones are well bedded, with precautions to prevent rocking, no cementing medium is needed. In fact, the joints may be designedly allowed to gape to permit the grass to spring out of them, which will give an unconventional but not unpleasing effect to a path crossing a lawn.

Red sandstone is an excellent material, and white stone is admissible, as it soon loses its glare, and tones down under the influence of weather and vegetable growth.

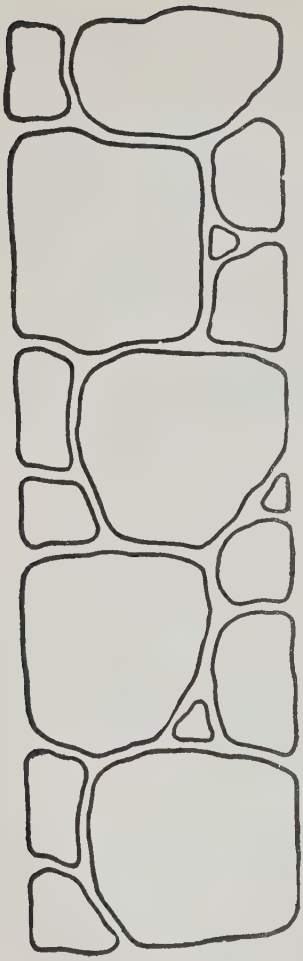


Fig. 22.— Design for stone path

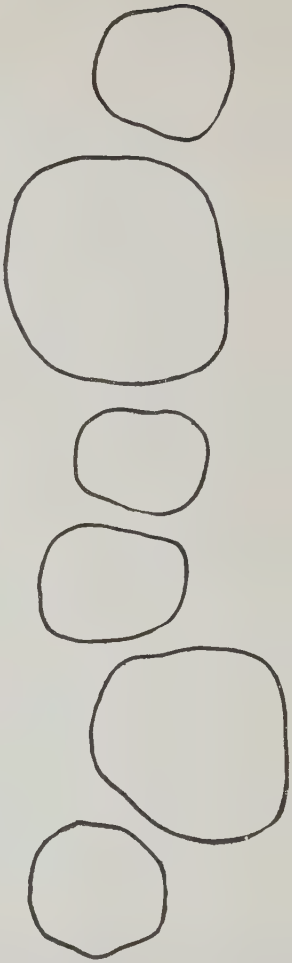


Fig. 23.— Design for stone path

The gardener with command of this class of material might use it in the form of stepping-stones, as the Japanese do, but the effect so obtained must not be overdone. Its legitimate place is on the grass.

NOTE — In the use of a non-binding material like blue stone it is well to screen out all fine stuff which otherwise would adhere to the boots in wet weather and be carried into the house. Shells form an almost hopeless material for the garden. Their innate friability precludes the separation of large from small, and renders them the most persistent material I know of for finding its way indoors.

CHAPTER VIII

Grass as a Foundation

There is something delightfully soothing in a well-kept stretch of verdant turf. It is nature's embodiment of the sense of repose, the mantle with which she covers the crudities of man's handiwork, the best background for our flowers, and, in most cases, the criterion by which we may judge the capabilities of the gardener. If turf we must have, let us have it green and fresh and innocent of spot or blemish. Secondary as it is to the flowers, yet it must receive the best attention we can give it. The picture loses much of its charm if the frame is unworthy of it.

We may obtain our grass in any of three ways: we may import turfs, sow seed, or be content with the old pasture grass as we find it. Just which we decide upon will be governed by circumstances.

Old pasture is not always a success, particularly

upon heavy land. It may be growing upon too thin a soil, and we should find it water-logged in winter and scorched in summer. Moreover, it may be full of undesirable weeds, and infested with insects ready to migrate to our beds and borders. On the other hand, we may be lucky in lighting upon some rich meadowland in which the conditions are favourable to the growth of good turf, and where thistles and other noxious weeds are conspicuous by their absence. In such case we may "leave well alone," and rejoice that we are saved the trouble and expense of further operations. Should we be driven back upon one of the other two expedients, we must make our choice according to the local conditions. Which is the more economical in cost, turf or seed? This problem we may work out for ourselves when we know the cost of turf in our district. We may be able to get it for the labour cost of cutting it, and, if it is near at hand, the total cost may be small. But we may have to pay for our turfs at current rates, usually about twenty or twenty-five cents for turfs of three feet by one foot. About thirty-six hundred and thirty turfs would be required

to cover a quarter of an acre, and here we are faced with a large outlay for material alone.

The same piece of ground could be sown with one to one and one half bushels of grass seed costing about $5 per bushel, which is very slight outlay for material. Then the labour of turf laying would greatly exceed the labour of sowing.

The principal advantage of using turfs is that we obtain a close, matured grass surface more quickly than we can do by sowing. On the other hand, there is always the risk that our turf may contain an undue proportion of weeds, though on this head a careful examination of it in bulk should enable us to form an opinion.

Though the spring is considered the best time for turfing, it may be done at any time if sufficient and proper precautions are taken. Sowing can only be done with the certainty of a good result in the spring and autumn. This consideration may carry weight with gardeners who are anxious to secure an early appearance of completeness in a new garden.

Whether turfing or sowing be practised, it is equally necessary to prepare properly the

ground. If levelling has to be undertaken in the interests of tennis and croquet, that is the first operation, and with it should be combined draining, if the nature of the ground demands it.

In the levelling process the top-spit containing the most valuable part of the soil must be first laid aside, to be subsequently distributed over the levelled surface. This done, and the levelling completed, the undisturbed subsoil at that part of the ground which has been lowered must be forked over to a depth of eight inches. The whole surface may then be treated with decayed farmyard manure well forked in, and the top-spit redistributed upon it to form a layer eight inches thick.

If the original layer of soil is insufficient, now is the time to supplement it by an additional supply imported from outside, or obtained as a by-product from some other part of the garden. Planks should be used where the barrow is in operation; otherwise ruts will be caused that are not easy to obliterate.

Screening may be practised if the surface layer is stony. It is essential when sowing

grass seed, but of less moment where turfs are used.

The operation of laying the turfs is a simple one once the ground is brought to a good surface, but it should not be done immediately after the preparation of the ground. Time should be allowed for subsidence, particularly if any part of the ground has been banked up above the natural surface. If rain supervenes so much the better, as it will hasten the subsidence, disclose inequalities, and render the soil in a better condition to weld with the new turf.

The turfs should be laid in close contact over the whole surface, gaps at the joints being filled up with fine soil as the work proceeds. Inequalities in the ground may be made good as they come under the workman's observation, with the same material. After all is laid, the surface must be gone over with the beater, and all upstanding places treated with it until they accord with the general level. If no rain immediately follows, the turfs may be submitted to a good watering, after which the beater should be used again, and any hollows and gaping joints should be filled up with soil.

After a day or two's rest, the roller should be brought into operation to further compact the surface and reduce inequalities. After that, the usual operations of mowing and rolling may be performed as occasion calls for them. It is well to look for early indications of weeds on newly turfed ground, and to promptly eradicate all that appear.

Before sowing is attempted the ground must be well compacted by treading or rolling until it will no longer take footprints. It should be then lightly raked over to provide lodgment for the seed. The operation of sowing is best conducted on a calm day, and the best time of year for the purpose is from the middle of March till the end of April. Autumn sowing should not be later than the middle of September. Some authorities are in favour of autumn sowing, for the reason that the soil is warm and the dews heavy.

The quantity of seed should not be less than one quart of recleaned seed to three hundred square feet. It is better to err on the side of too much than of too little. A bushel of lawn grass seed as usually understood in the trade weighs fourteen pounds. Obtain the

seed from a reliable firm and follow closely their printed instructions. Old seed purchased from local sources, even if bearing a well-known name, may be disappointing, and grass seed sold in bulk at small country stores may contain an undesirable percentage of other seeds or chaff.

Sow broadcast, taking care to leave no bare places; cover at once with a sprinkling of fine dry soil and roll. If the surface soil is damp it will pick up on the roller, and bring the seeds with it.

Birds must be kept away by stretching black cotton or garden netting over the ground, or by covering it well with pea brush or other similar bushy material which may be at hand.

The grass plants should make their appearance within twenty-one days. If rain has followed the sowing it may be earlier.

When they have obtained a height of from three to three and one half inches the ground may be rolled, and the next day the mower should be passed over it, taking the precaution to set the knife so that it does not cut close to the ground. It must be in the best condition for cutting, or it will drag up the young grass

plants instead of taking off their tops. After this, at intervals, the usual routine of rolling and mowing may be followed, not omitting watering if the weather proves dry.

Should plantains — the weeds which come most often to mock the lawn maker — appear, they may be effectually dealt with by placing a pinch of dry table salt on the crown of each plant. This kills them in a day or two.

Sown grass is materially assisted if treated early with an approved fertilizer, of which the seedsman may be trusted to recommend one suitable.

If moss makes its appearance, it implies that the soil is out of condition, either owing to the need for drainage, or to the absence of food for the grass plants. In most cases the application of a fertilizer, by stimulating the vigour of the grass plants, will cause the moss to disappear. Moss in itself is in no sense harmful, but is always an indication of a poor soil.

Tennis and Croquet Lawns — These, of course, should not only be dead level, but should have faultlessly flat surfaces, and I may here give a few directions for levelling.

If possible, a position should be selected where the ground is naturally approximately level. When this is not feasible, it becomes

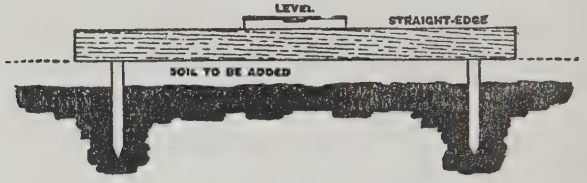


Fig. 24.— Level and straight-edge

necessary to transfer soil from the higher to the lower parts of the ground. The operator should provide himself with a long straight-edge (say, seven feet long) and a spirit-level, as well as a supply of stout wooden pegs. He must first get the foundation approximately level, using the straight-edge on the surface, or sighting from tall pegs driven into the ground carrying cross-pieces fixed horizontally by means of the level. He should then drive in pegs over the whole surface six feet apart, and standing so much above the foundation as will allow for the amount of surface soil to be subsequently distributed over it. Taking a central peg as a datum, he should work outward, adjusting each peg in turn by means

of the straight-edge and level until the tops of all are at the same level. It only then remains to fill in the soil to the tops of the pegs, or slightly over, to allow for subsidence and compacting by rolling. The pegs may be removed at any time afterward. The tennis court has a net size of seventy-eight feet by thirty-six feet, or nine feet less in width for the single game.

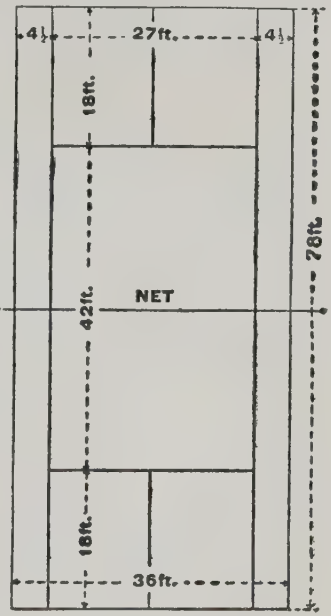


Fig. 25.— Tennis court

Additional width must be allowed for the poles and for the players, therefore a total clear space of one hundred feet by fifty feet is not too great an allowance, and may be taken as the minimum compatible with the comfort and convenience of the players.

The full-sized croquet ground, according

to the revised rules of the Croquet Association, should measure thirty-five yards by twenty-eight yards, or in feet one hundred and five

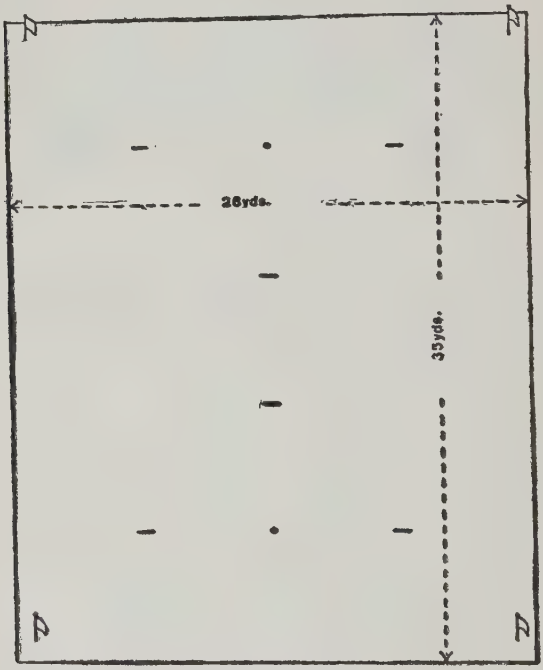


Fig. 26.— Croquet court

by eighty-four, which space must be all clear turf.

In considering the position of a tennis or

croquet lawn the designer has the choice of two courses. He may allot it a space to itself, enclosing it by a hedge or screen of trees or shrubs, and thus put it out of sight as something not altogether in harmony with the decorative scheme of the garden, or he may let it frankly proclaim itself as an obvious feature and component part of the garden design. There is something to be said for both plans. In a garden of straight lines the rectangle of turf set aside for tennis or croquet would not be so conspicuous a feature as in a type of garden in which a naturalesque effect was aimed at, and winding walks were elements in the design.

There is no need to make hard and fast boundaries to the tennis or croquet lawn. It may be constituted upon any convenient and sufficiently roomy stretch of level turf where the game and horticulture are not likely to come into conflict.

Tennis lawns made upon ground which carries a marked slope are not always sightly features, reminding one of the idea one forms of the "hanging gardens" of Babylon. Such lawns may be considered indispensable, and

if they have to be made at the expense of much excavating and banking up, means should be found to conceal their artificial outlines by means of shrubs, trees, or other suitable screening.

The Bowling Green — Revived interest in bowls has induced some owners to install a private bowling green on their ground. The regulation size is forty yards square, but less width is admissible if space is restricted. It is usual to sink the green below the general surface, and it must be truly level. The sloping banks and the space adjacent to them should be turfed, the former as a check to the bowls, and the latter to provide a vantage ground for spectators.

The Grass Plot — I have already intimated the importance of studying breadth of effect in the garden. Nothing tends to destroy this character so much as the injudicious chopping up of the grass space.

The shape of the grass plot is determined in a large measure by the other elements of the plan. Yet there are opportunities for the gardener to go astray if he does not realize the principle for which I am contending. Take,

for instance, a garden the boundaries of which converge. The planner may find, when he has taken sufficient space for his borders and paths, that his grass runs out to a mere wedge. In such event he would do well to take off the acute angle by adding the space either to border or path. Again, in the making of borders and beds it is surprisingly easy to produce awkward shapes in the grass details, particularly when working with curved lines. A good rule, therefore, is to permit no acute angles, narrow isthmuses, tapering verges, or crescent horns in grass. (See Fig. 27.)

Fig. 27.— Acute angles in grass

In the rectilinear treatment of small gardens these difficulties will hardly arise, but they may do so in cases where the garden plot is a converging one. When the garden is of sufficient size to call for treatment in curves, the shaping of the grass demands more careful consideration, the main object

being to avoid anything that will detract from the breadth of effect, of which the items just enumerated are those most likely to beset the inexperienced designer.

The practice of loading the grass with an archipelago of small beds, cutting it up into a fretwork design, is to be condemned for the same reason.

The placing of beds on grass calls for restraint and discretion on the part of the gardener. The artist "feels" where a bed or group of beds could be placed with advantage to the garden picture, because he has an eye trained to proportion. Those who lack such training must first realize their deficiency, and then seek for guidance by studying elementary principles, of which that applying to breadth of effect, already sufficiently explained in these pages, is one of the most important.

The accompanying illustration (Fig. 28) shows the correct way to correlate the bed with the grass when the former has to fill a projecting space.

It is certainly better to err on the side of having too few than too many detached beds.

It will be useful here to accept my injunction

about the grass verge, under which term may be included the strips which separate bed from bed in a group. These should always have parallel sides and a minimum width of eighteen inches. Two feet is better if space permits.

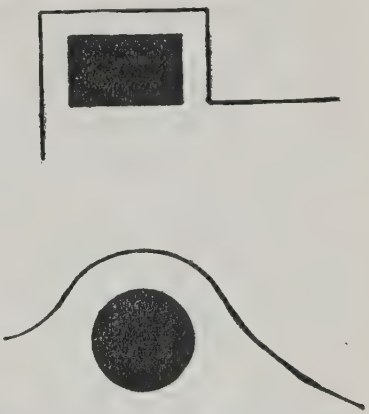


Fig. 28.— Beds in relation to grass shapes

When a garden plot is situated on sloping ground, if the slope is slight only, it is better to let the garden follow it than to attempt levelling, provided that no considerable space is to be reserved for tennis or croquet.

On ground of irregular contours the irregularities may call for modification, or they may be entirely desirable as affording opportunity for variety in the general treatment of the garden, according to the particular views of the garden owner. Whenever the character of the ground is such as to leave certain spaces in the form of hollows, these hollows should

be filled in or drained; otherwise they will become pools in wet weather. As with lines, so with surfaces: the curves should flow without break, so that we cannot detect where one runs into the other.

Grass slopes should be used sparingly, because they involve extra labour in the mowing and are apt to suffer in time of drought. When necessitated by the nature of the ground, as in a hillside garden, they should not be steeper than one in two, or both these disadvantages will be intensified.

Another point to be considered in the making of a grass plot is its level relative to the adjacent paths. It is not unusual to find paths sunk so much below the grass level that the soil is exposed beneath the turf. This allows soil to break away, or be washed out by the rain, to the detriment of the path. It also involves additional labour in trimming the grass edges. There is no need to allow more elevation to the turf than is sufficient to ensure the mower clearing the gravel when used on the edge of the grass, and if this rule is followed there is no danger of gravel straying on to the grass. From two to three inches is quite

enough. In practice, the question is most likely to present itself in connection with path making, when the gravel surface would have to be regulated to ensure the above result.

When it is a case of grass in juxtaposition to soil, as in the making of beds, the rule does not call for such stringent observation, but to satisfy the eye the grass edge should not stand higher than three inches above the soil. If much less there is the danger of soil and stones working on to the grass.

Grass Paths and Edgings — Though grass is unsuited for paths, there are cases in which it may be used, as, for instance, when an alternative path of gravel exists. I have seen the grass path installed with excellent effect in the kitchen garden, where it gives quite a distinctive and finished appearance to that department. In the case to which I allude the ground had quite recently been meadow-land, and the vegetable beds had just been cut in the turf, allowing main paths five feet wide, with narrower connecting paths of half that width. I cannot commend it as economical of space, but where there is ample room this use of grass has its advantages on

the score of appearance, and is highly preferable to the usual cinder path, which requires that an edging be provided.

The grass path also may have its utility in the flower garden, though it usually comes into existence by some adventitious circumstance rather than by design. A border skirting grass may have opposed to it a long bed, and the gardener may decide to connect the two by a pergola. This at once turns the intervening grass strip into a path, and a very charming one, where the walker may find a tunnel of greenery, his feet on verdant turf, a canopy of blossom overhead. Grass edgings are used in both flower and kitchen gardens, and I have already referred to them by the term "verge." Each gardener will decide for himself whether the space at his disposal admits of such a feature, and whether the effect to be obtained from it is commensurate with the labour involved in keeping it trimmed. If he has any doubts in the matter he should forego the verge, because, uncared for, it is an unsightly and wasteful feature.

CHAPTER IX

How to Plan a Garden

It is well for the gardener to start with an open mind. He should look for suggestions from the site, not omitting to take into account its immediate environment. The best gardens are personal: they take their character from their makers.

I am sometimes asked "What style of garden would you suggest for my plot?" and I am tempted to reply, "The common-sense style." The exact treatment for a given plot is not to be laid down by rule. The gardener may not recognize the possibilities of the site at first glance, but he will do so when he has carefully studied it. In Chapter IV I showed the utility of straight lines in an oblong plot of limited size. I do not wish to magnify the difficulties of planning, and I may say at the outset that the more knotty problems arise most often in connection with

plots of irregular shapes or contours, or plots unfavourably conditioned as regards aspect and surroundings. The treatment of a small rectangular garden plot may be a very simple matter, provided due weight is given to aspect. Yet even the smallest plot involves alternative modes of planning, and then the gardener must give his casting vote for that one which, after satisfying the requirements of horticulture and the conditions which make for artistic quality, best accords with his personal views.

The first point to consider is the apportionment of the various sections of the garden:

How much space do I require for vegetable ground?
Do I want a tennis or croquet lawn?
Have I to provide a playground for children?
Must I limit my flower space to what I can properly manage in my spare time?

These — and possibly other — questions will occur to the planner, and he should answer them definitely before he starts to plan. In doing so he will naturally commence to evolve

some kind of skeleton idea of what he would like his garden to be. His next step should be to lay down on paper a plan of his garden site *to scale*, say one eighth of an inch to a foot, and mark on it the house, indicating the position of the doors back and front, or at the sides, as the case may be. He should then add an arrow to show the north point, to remind him, in the course of his work, of the direction in which the maximum amount of sunlight will fall. The gate by which the premises are entered from the roadway must be marked in its proper position. This much accomplished, the gardener will have before him in bird's-eye view the main factors that should control his planning.

If he has decided to grow vegetables, he may at once rule off on the paper as much space as he wishes to devote to that purpose. Usually this will be situated at that part of the garden remote from the house, and there are excellent practical reasons for it occupying that position. The division should be at right angles to the garden's length in a garden with parallel sides, even though the end fence or wall is oblique. Irregularity in the shape

of the vegetable plot is immaterial, and the right-angled division squares things for the flower garden.

Leaving the vegetable ground for the present, the next thing is to locate the principal border, and if the aspect is east or west, there should be no hesitation in giving it a place against the north fence, where it will receive full sun. The planner may therefore rule a line parallel with this fence six feet distant from it, adding a second parallel line at, say, three feet beyond to define the principal path. If space permits, a third line may be added, at four feet beyond the second, to mark off a second border, the near side of which will be the grass. Reference to the illustration (Fig. 29) will make these operations clear. The path is now represented by a narrow ribbon with no terminal at either end. We may now consider the approach to and destination of the path. The near end must be coördinated with the house door, as explained in an earlier chapter, and this could be done by marking off a stretch of gravel immediately behind the house, from which the path may start its journey. Such a device is convenient when the

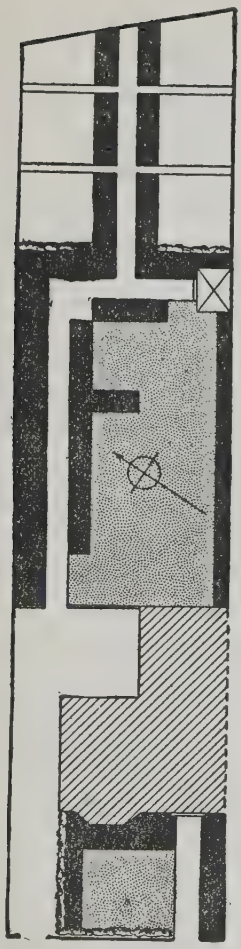


Fig. 29.— Typical garden plan

Fig. 30.— The method of offsets

aspect is that assumed in the example, but with a north aspect the space about the rear of the house would be too valuable to waste as gravel, and another device would have to be employed. I need not describe every possible mode of doing this, as many examples will be illustrated in the plans which follow. As for the path's objective, I have already offered suggestions in an earlier chapter.

Though it is a good rule to make paths go direct to their destinations, an exception is permissible and even desirable in a long garden, where a single straight path would prove a monotonous feature. I therefore favour some device which breaks the line, such as may be contrived by cranking the path or by introducing an expansion into its length.

The cranked path gives opportunity for allowing the principal border to terminate in a transverse extension, by which the vista is improved, and a screening effect obtained.

We will assume that our path sets out from the gravel space immediately behind the house, threads through our borders, and terminates in, say, a summer house. The treatment of the space to the south of it may now be

taken in hand, and in deciding how much to allot to the border we must be guided by our sense of proportion and by the value we set upon our grass plot. If space permits we may add a narrow border along the southern fence line.

I have now traced what I may call the evolution of a small rectangular garden. The treatment has been simple, as the case demanded. As a plan, the design ensures a proper coördination of the garden with aspect, and so much variety as may be obtained within so limited a space without over-elaboration. It need hardly be mentioned that this particular treatment would not hold good for a plot with a different aspect, and for that reason it should not be copied unless the aspect is approximately the same as indicated in this example.

The gardener has now to build up his picture skyward. This involves the use of such natural objects as trees, shrubs, and flowers, and of such artificial adjuncts as arches, pergolas, summer houses, arbours, and the like. Before he decides upon the placing of these things he should sally forth to the site, plan

in hand, and take his stand, say, near the house door, or in some central position from which he may hope in time to obtain a general view of his garden picture. There he may exercise his mind by building in imagination upon his ground plan, seeking to place such features as he may decide to introduce into the garden. He will obtain suggestions from already existing objects. For instance, the presence of a well-grown tree on neighbouring premises may help the picture, enabling him to dispense with the planting of trees on his own. On the other hand, he may observe some unsightly object which it will be necessary to endeavour to screen from view.

Bearing in mind what I have already written about "composition" in the artist's sense of the term, he must avoid symmetry in masses, and seek for balance of effect by other means. If he has decided upon a summer house, let him have it built with a simple, pointed roof, and restrain his impulses in the direction of destroying its outlines with a maze of rustic work. Its pyramid form is useful in giving a certain punctuation to the skyline. He may even decorate it with a weather-cock,

which would be quite appropriate and useful in the picture. I do not demand that the summer house shall stand out naked amidst its surroundings; it will be better associated with trees and shrubs. It is not desirable to have a uniformity in height in these artificial structures. If arches or a pergola are introduced into the scheme, do not let them soar up to the level of the weather-cock on your summer house.

Trees are always useful in attaining that necessary height in the garden picture for which the designer must work. They must be placed so that their shadows do not intrude upon the flower borders, and, as I have already stated, their arrangement must be innocent of symmetry.

Let no two be at the same distance from your standpoint, and select them of different kinds and sizes. Grouping is preferable to scattering, or placing the trees in "serried rows."

By carefully weighing these various points, with the plan before you, it will not be difficult to arrive at a provisional arrangement of the accessories we have been discussing. You

may next jot down on the plan where you think an arch, tree, or pergola will be of value, and you will then have all but completed your labour — on paper.

Lastly, such smaller accessories as sundials,

Fig. 31.— Arrangement of trees

vases, and rockwork can be located, and indicated to scale on the drawing.

All this time we have left the vegetable plot alone, after cutting it off from the flower territory, and we must now revert to it. Some gardeners may prefer to treat it as a thing

apart, to be concealed at all costs. Gardens, however, are so small in these days of dear land that we cannot afford to neglect the possibilities of the vegetable plot in the general garden effect. Therefore we should see how far we can use it to increase the apparent space at our disposal. A good way of effecting this result is to contrive that a flower border, or borders, continue from the flower garden into and through the vegetable plot, thereby extending the garden vista to the extreme limit of the ground.

In certain circumstances it may be advisable, for the sake of obtaining a particular effect, to adopt a division between the kitchen and flower garden which is not a straight line. It may be a bold curve or a cranked line.

The division may be definitely marked by a fence or hedge, or less conspicuously indicated by an informal line of shrubs. Much depends upon the disposition of the other factors and the gardener's views as to the desirability or not of allowing his vegetable productions to claim attention. I would not for a moment contend that the kitchen garden is unsightly. On the contrary, its bold masses of green may

be valuable as background, and by no means unbeautiful in themselves. Still there are times when the tenants of the vegetable plot do not look their best — as, for instance, when Brussels sprouts tower lankily skyward, and peas are yellowing and sinking into disorder.

The planning of gardens of larger size than the typical example just treated involves the same general principles, though the details and style of treatment may be different. It is mainly a question of scale, though the inclusion of additional features facilitated by the larger area of ground available may tend to complicate the problem. Still the mode of procedure should be along lines similar to those already described, and the planner must ever be alive to the importance of studying aspect and of building up a picture in three dimensions.

Gardens of irregular outline may involve some early difficulties in planning, but they are generally amenable to treatment on common-sense principles, and not infrequently such gardens are, by their unusual shape, eminently adapted for obtaining picturesque effects. Examples of such gardens will be found in a later chapter, reference to

which will afford the reader more guidance than further written description.

When, by reason of the nature of the ground, its extent, or the special predilections of the gardener, the main lines of the garden are to be treated in curves, the key to the best result is not always so easy to find. To those who may have difficulty in thinking in curves, I may suggest that they first lay down the main lines of the plan in straight lines, afterward translating them into sinuous ones. This may be of some help, but it will not remove all the difficulties, and it is not easy to give rules to cover the whole ground.

It may be taken as bad practice, however, to associate curves with straight lines, as, for example, to oppose a straight grass edge to a curved border, leaving a path of varying width between. I am not sure that the practice of running a border, whose near line is a series of curves, along a straight fence is to be commended, though it is often done. Its best excuse is that the shrubs and taller plants in part conceal the foot of the fence and render its straightness less conspicuous.

In the laying down of curves geometry helps

us but little. The eye is the better guide, and a length of rope an excellent help when marking out the ground. The rope may be laid along the proposed route of a curved path, and its perspective appearance noted. If the curve fails to satisfy the eye the rope can be moved and rearranged until a good result is obtained.

All curves which are parts of circles are easily described with the help of a cord and centre peg.

When setting out curves the course of which has first been laid down on the plan the method of offsets is the easiest. (See Fig. 30.)

This is sufficiently explained in the illustration, where a boundary fence is the datum line. When the curve passes over an open space a special datum line must be laid down, either by the use of a stretched cord or a row of pegs sighted into line.

CHAPTER X

Sloping Gardens

Gardens upon sloping ground, if the slope is considerable, demand special treatment, which will vary according to circumstances. Such gardens may be made picturesque and interesting, but are hardly desirable acquisitions to the horticultural enthusiast. This is particularly the case if the aspect is other than southern.

In a steeply sloping garden the aim should be a quite informal or naturalesque treatment. Winding walks may be carried *across* the slope, turning upon themselves in an irregular zigzag. Here and there pockets may be carved out of the hillside to make level space for flower growing.

Terracing, the only effective way of securing sufficient level space, is always a costly matter, and when the slope is considerable it would result in a heavy, artificial effect as seen from

the lower levels. On the whole it is better not to attempt too much on a steep hillside.

The first illustration indicates in sectional view the treatment I should adopt. Trees and shrubs may be used with good effect to mask the slopes and outlines of the artificial work. The

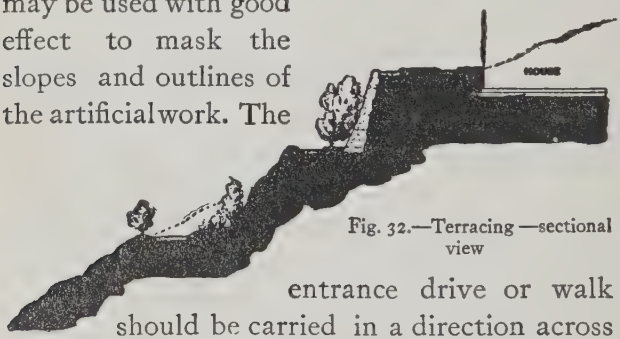


Fig. 32.—Terracing —sectional view

entrance drive or walk should be carried in a direction across the slope as far as possible, and if excavation and banking have to be done, it may run sufficiently far back on either side to provide space for flower ground.

Fig. 33.— Terracing — sectional view

In the case of small gardens, some simple system of terracing like that indicated

in the second sectional view is the best treatment.

The natural slope is shown by a dotted line and it is evident just how much excavation and banking is necessary. By a little care in fixing the levels it may be contrived that the excavated soil is just sufficient for making the banks. This is an example of a slope *away* from the house. When the garden slopes *toward* the house a different method should be followed, because the effect of looking from a low level up a slope is that little or nothing on the level is seen.

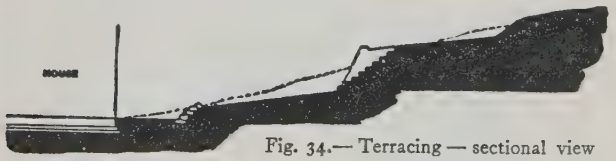


Fig. 34.— Terracing — sectional view

Thus, if terracing is done with a view to obtaining level stretches, the beds and borders will be hidden from sight until the observer ascends to their level. It is better, therefore, that the terraced part should be given a slight slope toward the house, as Fig. 34 shows. Gardens falling away from the house are liable to be very dry at the highest point.

On the other hand, gardens which slope toward the house throw the rain-water to the lower level, necessitating some system of drainage for carrying it away.

In treating of terracing in small gardens I do not use the term in the sense of walled terraces. Walls are costly and not always sightly adjuncts, especially in a small garden. The drop from one level to the next may be made by means of a grassed bank, a retaining board, or a rock-faced slope, according to circumstances. When the slope is to the south, the face of the bank is well placed for treatment as an alpine garden, and I know of no better way of dealing with it. On grassed

Fig. 35.— Steps in path

slopes shrubs may be used to conceal the horizontal margin of the slope.

Paths which pass from one level to another

require to be stepped, and this may be done in many ways. Possibly the most economical method is to fix wooden risers by nailing them to stout pegs well driven into the soil at each end, and to fill in the treads with gravel beaten down and brought to a fair surface. Retaining boards should be fixed at the sides, as shown in the illustration.

Gardens in which the natural slope is transverse to their length do not involve the same difficulties, and they are not usually found of such steep gradients, or, if they are, their small width, compared with their length, makes the problem of planning a simpler one. It often becomes feasible to effect a change of levels at the path line in some such way as appears in this sectional view.

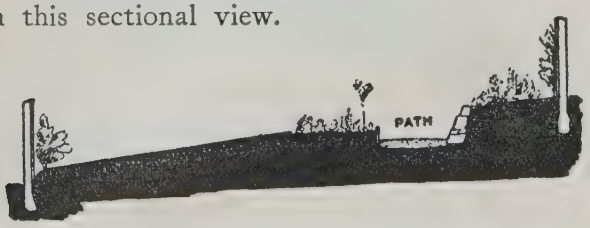


Fig. 36.— Dealing with a transverse slope

In this illustration it will be seen that a raised border is made on the higher side of

the path, supported by a retaining board, rubble wall, or by rockwork. If the lower boundary is a fence, the water which drains to that level will tend to rot it. It is good practice, therefore, to make the fence open for two or three inches above the ground surface. If the boundary is a wall it may be necessary to introduce a rubble drain along its foot. In neither case, however, would such an expedient be necessary unless the soil was a heavy and impervious one. A narrow border along the lower boundary will usually serve as sufficient drainage.

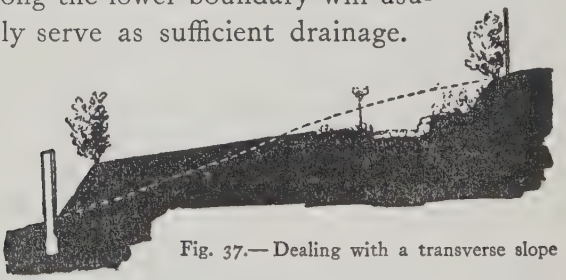


Fig. 37.— Dealing with a transverse slope

When the slope is steep in a transverse direction it may be necessary to remake the ground by raising the lower side with soil taken from the higher, and if the lower boundary is a fence this would necessitate a bank, as it would not be feasible to allow any depth of soil to lie in contact with the fence.

The existence of such a bank as seen in the illustration (Fig. 37) is not a very sightly feature in any garden, and should only be adopted when the circumstances preclude any other arrangement, and in that event the best plan is to plant the head of the bank with shrubs or with a hedge.

The only other case to be mentioned is that in which the slope is diagonal, and for that no special guidance can be offered, because so much will depend upon the amount of slope and its direction considered with reference to aspect. The aim should be to model the surface in such a way as to secure the proper conditions for horticulture and the convenience of the garden user, without attempting too much work of an artificial character. It should always be remembered that dead-level plateaus on a considerable slope proclaim themselves as man's handiwork, wherefore it is well to conceal as much of this work as possible.

In some cases it may be desirable to effect a compromise by not setting out to bring the ground to a series of levels, but by merely modifying the original slope to a series of slopes

of less gradient. In all such problems the main point is not to outrage Nature, but rather to coax her in the direction in which we wish her to go, covering up our footsteps as we proceed in the work, so that the final result shall not disclose too obviously what it owes to spade work.

As steps are necessary adjuncts in sloping gardens, I may give some further suggestions for making them.

An alternative plan to the one already described is that shown in the third figure in the illustration (Fig. 38), in which the treads are made of stout boards supported on pegs driven into the ground. Yet another plan is to attach the treads to cheeks of wood, making a single complete structure, as in the fourth figure.

When the path passes through rockwork I always build the steps of rock pieces.

Bricks may be employed for steps, either set in mortar or laid loose, as in the first figure. They are better laid on edge, and it is well to chip off the angle where the tread and riser meet, or to use bull-nosed bricks.

Slabs of stone make good steps, and by their weight keep in place if well bedded, without

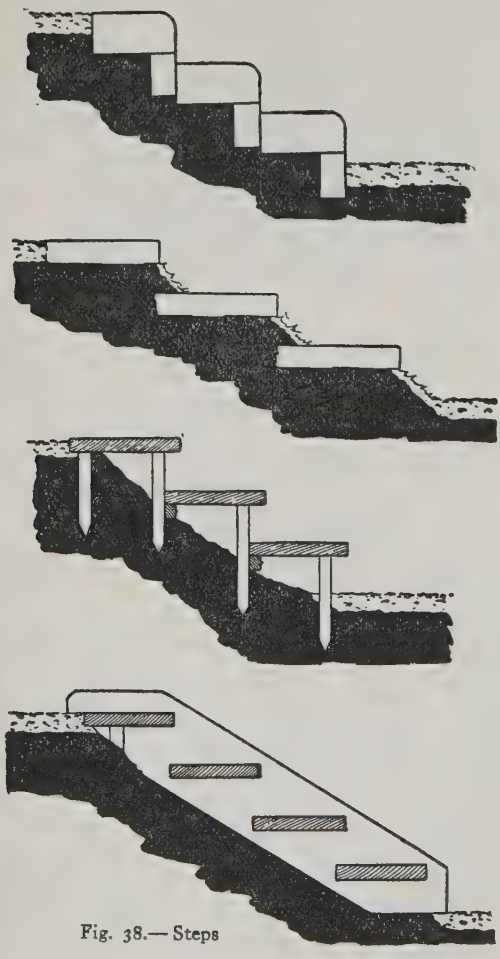


Fig. 38.— Steps

the need for cheeks, though it is best to make the risers of brick to prevent soil from working out from beneath the tread. On moderate slopes the riser may be of soil left at an angle and turfed. There is something quite un-

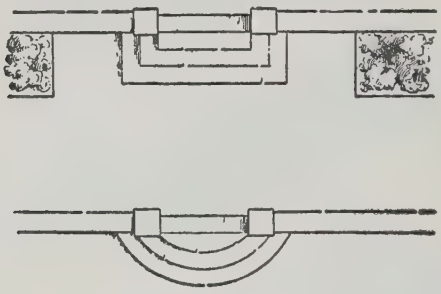


Fig. 39.— Spreading steps

conventional in such steps as illustrated in the second figure.

When the slope is moderate, but long, it is well to break the line of steps into two or more flights, as a concession to appearances.

When the difference of level is small, a good effect will result from spreading the steps in one of the ways shown in Fig. 39.

I have avoided reference to architectural features associated with steps, as, for instance, side and wing walls, pillars, and caps. These,

if introduced into a small garden, should be unpretentious, and as far as possible designed to accord with the architecture of the house. If capped with flat stones the pillars may carry vases with good effect, always provided the latter are chosen with taste and a sense of proportion and fitness for their surroundings.

CHAPTER XI

The Rock Garden

There is no feature in the modern small garden so badly contrived as the rock garden, or "rockery," as it has come to be called. It is too often but a formless heap of stone rubbish or clinkers in which a few sickly ferns struggle for existence. A rock garden need not be large to be interesting, but it must be properly constructed and placed where the sun can reach it. To the real flower-lover the rock garden is a delight. There is no corner of his domain which yields more interest. It is a garden within a garden, a place where nature has all her own way, rewarding him with quaint and beautiful flowers and varied foliage from early spring to winter frosts. It is well to understand the scope and purpose of the rock garden, a thing all too often overlooked. The common plan of heaping together a mass of stone and mineral curiosities into a grotto-

like structure, and sprinkling the whole with soil, is the outcome of a misunderstanding of first principles. Let us look into the matter closely, and see just why our alpine plants should be associated with such apparently uncongenial material as stone masses. The answer is clear, if we inquire as to the character of their native habitat. The casual observer who has wandered through the Swiss uplands will have seen a wealth of plant life, jewelled with gorgeous blossom, clinging apparently to the bare surface of a rock, and he will have wondered how the solid stone could furnish food for so luxuriant a display. Yet if he had pushed his investigation carefully on the spot he would have found that every plant was rooted deeply in some crevice filled with soil. Here, then, is the explanation. The rock is but the flower pot. But it serves a very important purpose as such, holding a reserve of moisture gathered from the sky, and yearly collecting an additional store of soil, the fine débris of the mountain-side. Thus the plant has availed itself of natural conditions eminently adapted for its welfare, and therefore it flourishes.

The rock garden is man's attempt to imitate

these natural conditions, and if it fails in this, its principal function, how can it serve its purpose as a home for the plant?

The idea, not by any means uncommon with those who have not looked closely into the question, that there is some magic virtue in the rock itself by which these plants obtain food suitable for their needs, must be abandoned. The function of the rock pieces in our alpine garden is twofold. They serve to give us a suggestion of the natural environment of the plants we wish to grow, which is good; but, better still, they conserve the moisture in the soil, and thus ensure that the plants have a constant supply of it in all weathers.

This being so, it is well to select our rocks from material which is porous, and therefore capable of holding in its substance a certain reserve of moisture. Yet an impervious stone is better than none, as it reduces the area of soil subject to evaporation.

The next point to understand is that the soil in our rock garden must be well drained. This may be attained by ensuring that it is of a porous character and of sufficient depth. Drainage is assisted by elevating the rock garden,

or, what comes to the same thing, by sinking its floor below the general level.

It is not necessary to be lavish of rocks. In a well-designed rock garden the soil should bulk at least as largely as the rocks.

Position — The rock garden should be as far removed from a formal environment as possible. It is, or should be, our best attempt to imitate a piece of nature. If it is associated with walls, greenhouses, or other artificial surroundings the illusion falls to pieces. It is better also to keep it away from the neighbourhood of trees, whose roots would find their way into the soil and exhaust it, and whose leaves in autumn would sadly litter its surface. Moreover, it is well to be consistent in our mimicry, and to remember that the landscape is innocent of trees at the altitude where alpine flowers thrive best.

Aspect — The above conditions being satisfied, the only other one of importance is that the alpine garden should have a sunny aspect, though this does not imply that every part must enjoy full sun; nor would that be desirable, since there are plants which will thrive all the better in shade or partial shade.

One great charm of the rock garden is its variety, and that can best be maintained by providing all the conditions of aspect and exposure demanded by the various plants available for our purpose.

Materials — Perhaps the best material for the purpose is sandstone, but in most cases the gardener has to be content with what is most easily obtainable in his district. A hard, close-grained sandstone, granitic rock, or tuffa, limestone, and conglomerate will do. Soft stones which crumble away under weather influence are obviously unsuitable.

If natural stone is unprocurable, or its cost prohibitive, then the gardener must make shift with brickyard waste, but he should select that which is porous.

Clinkers, vitrified brick fragments, dressed stone blocks, portions of decayed statuary, lumps of alabaster, minerals, and sea-shells should never be seen in the alpine garden. Tree stumps also should be avoided, as they harbour fungi to the detriment of the plants.

The stone pieces should not be too small nor too uniform in size. Good bold pieces up to the largest size the gardener can conveniently

handle should be procured, and by preference they should be quadrangular, though only very roughly so.

Professional constructors sometimes use an artificial stone made on the spot, by plastering a coloured cement over a basis of rough brickwork. I have seen some very clever work of this kind, indistinguishable from a natural out-crop of rock, and, for all I know to the contrary, it may serve excellently. But unless done by skilled hands accustomed to imitating the form and stratification of the natural rock, it would be a failure. I have seen it suggested that good imitation rocks may be made by coating brickyard waste with Portland cement. The objection to these processes is the liability of the artificial surface to be flaked off by frost or rough usage, thereby exposing the fraud.

Soil — In this particular we cannot do better than follow nature. We have seen that in alpine regions the crevices in the rocks become filled with fine débris, the disintegrated particles of the rock itself, and therefore containing small stones and sand, with which, of course, is associated humus derived from decaying plant life. This, then, suggests an artificial

mixture for our rock garden in which similar ingredients find place. Such a mixture may be made as follows:

Good friable loam . . .	6 parts
Chips of sandstone . . .	1 part
Sand or road scrapings . .	2 parts
Leaf mould	1 part

To this may be added a moderate proportion of well-decayed stable manure. The whole should be well mixed and is then ready for use.

Although the above compost will suit the greater number of plants usually grown in a rock garden, it is unsuitable for bog plants and for those which thrive best in a calcareous soil.

To meet the needs of these it is desirable to reserve a place where some peat may be introduced for the benefit of the bog plants, and to add a limy constituent to the compost (lime or broken limestone) for those parts of the garden in which it is intended to grow lime-loving plants. Beyond that it is hardly feasible or worth while to go in specializing the soil.

The prepared soil must be entirely free from clay, and to ensure this care should be taken to obtain the proper kind of loam.

Making—Having obtained the rocks and the soil, and having selected a suitable site for the rock garden, the forming of its contours may be undertaken. In most cases a path will pass through it, but this will have to be made last. Bearing in mind the importance of drainage, the gardener must first decide whether his rockwork shall stand above the general surface or be partly sunk below it. On heavy clay soil the former plan is best; on a gravel, or other kind of porous soil, the latter. A sunk garden has the advantage that the excavated soil is useful for building up the banks, provided, of course, that it is suitable as an ingredient in the compost just described.

The gardener may next proceed to mark out the plan, by pegging or otherwise, and then barrow the soil into place. Now comes an important part of the operation, for the final effect is controlled by the way in which he arranges his heaps. He should endeavour to avoid a formal or symmetrical distribution of masses, which is never seen in nature, by throwing them up as if their shape and height were a matter of chance.

The illustration below gives a suggestion of what should be aimed at. Not until he has completed the whole of the base-work should he add the rocks, because as the work proceeds he may

Fig. 40. — Earthwork in the rock garden

find it advisable to raise the ground here or lower it there to improve its contours, which he should view from various standpoints to make sure that he has obtained a good general effect.

That much accomplished, the gardener may commence to place his rocks by outlining with them the foot of each slope, thereby at the same time defining his path. For this part of the work he should select rocks of various sizes, here and there introducing a bold mass to accentuate some angle, thereby avoiding the effect of an artificial edging. This edging must be well done, with the rocks in close contact,

otherwise much soil will be subsequently washed out on to the gravel; but no cementing medium should be employed. Such crevices as remain may be well rammed with compost, and will then offer temptation to the plants to thread them with rootlets, by which the soil will be sufficiently held in place.

In laying down the line of the path no attempt should be made to maintain equality of width throughout. On the contrary, a much better effect is secured if the path varies in width. I would even advocate the placing, at one or more spots, of an island of rockwork in or near the centre of a specially contrived expansion of the path. (See Figs. 105, 116, 129.)

Fig. 41.— Rockwork section

The soil may next be brought forward to stand level with the rocks at all points, thus affording a basis on which to proceed with the next tier, which, with those above it, must be contrived as a number of irregular pockets

standing at different levels, and not as a series of parallel terraces, which would be an obviously artificial arrangement. Here again bold pieces of rock must be used at irregular intervals, constituting miniature ramparts, over which some pretty trailing plant will later on make a gay show, or which a delicate arenaria may clothe with its velvet greenery and tiny white stars.

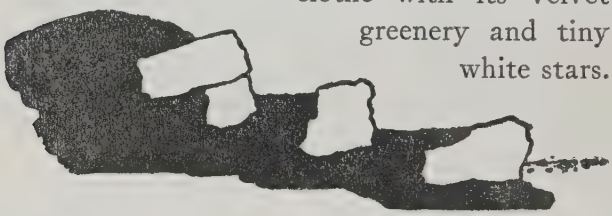


Fig. 42.— Rocks in relation to soil

The rock masses should not be deeply buried. A good rule is that on the exposed side no rock should be deeper in the soil than one fourth of its height, or sufficient to effectively anchor it in place.

The rock masses should not lie higgledy-piggledy, but there should be some kind of relation amongst them, which is best secured by giving all the flattened masses a slight tilt in some particular direction, to convey the idea of a naturally inclined stratification.

Rocks set on end, sugarloaf fashion, are not infrequently seen in the gardens of amateurs, but they should be omitted by those who aim at the best effect. If height is desired at some given point, a couple of bold masses may be superimposed, led up to by other pieces, as would occur in nature.

Fig. 43.— Arrangement of rock masses

The pockets or spaces of bare soil should vary in size, and be irregular in shape. They should never take the form of a series of scallops. Some inclination may be allowed to the soil, but not much, or it will certainly travel downward with each shower of rain.

Rough steps may be introduced at a suitable point or points, say to give access to the rock garden from the grass plot. These steps may be built of flat rock pieces, their crevices being filled with soil, in which rock-foils and stone-

crops may afterward be encouraged to grow. If these steps be introduced, it is better to carry them between two adjacent mounds than to make them ascend a conspicuous elevation. A visit to a well-made rock garden — that at Kew, England, for example — in the winter-time will afford the gardener much practical guidance in this kind of work. He will see just how far it is possible to realize a naturalistic effect, and may gain some wrinkles in regard to the disposition of his rocks.

The Kew alpine garden is not the most nature-like garden of its kind, because other considerations have had weight, such, for instance, as the convenience of many spectators, and the need for accommodating a representative collection of alpine plants. Still it is sufficiently typical of good work to be worthy of imitation.

There are rock gardens in which the chief charm is their rocks, placed together so skilfully that they might be mistaken for a natural out-crop. Such gardens have cost their owners many hundreds of dollars, but they are no better for their purpose than the more simple type of garden I am describing. The gardener

must try to avoid appearances which indicate too obviously the artificial character of the work. For instance, a promontory formed at a bend in the path should have a line more nearly approaching the first than the second figure in the accompanying illustration.

Fig. 44.— Arrangements of rock masses

An artist would instinctively produce good contours; the less favoured individual must be guided by these precepts, and by such examples as he may find to imitate.

Though I do not offer it as an inducement to indifferent work, I may remark that Nature is ever kind to her votaries, and when the garden has been planted she will do her best to conceal shortcomings.

For bog plants it is well to arrange one or more bays, in which the peat may lie in a level surface, as peat is unstable on a slope. An

angle in the general structure may be cut off by a line of small rock pieces (not a straight line), and in that way a large pocket at the base-level can be made, in which the peat may be laid on a not too porous subsoil. Bog plants demand a water-logged home. If water is

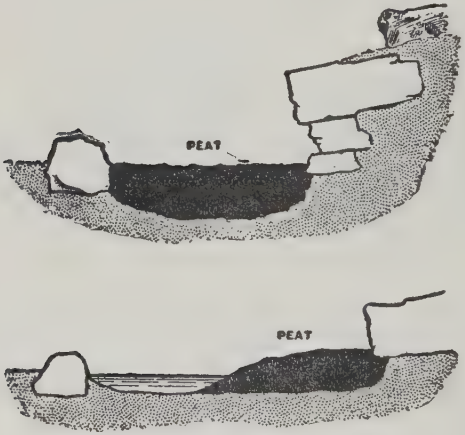


Fig. 45.— Arrangements of peat in the rock garden

associated with the rock garden, the place for bog plants is at its edge, where the peat may be allowed in actual contact with the water.

When all the rocks are in place, and the result when critically viewed is satisfactory, the gardener should proceed to fill in all holes and

crevices with his compost, using a thin wooden blade, or bricklayer's trowel, to probe them, to ensure that the soil gets down to the lowest levels. After the first heavy shower of rain he should go over the structure again, replenishing the soil where it has sunk in.

If of necessity he has had to use brick waste as a substitute for rocks, his task will not have been so easy, for it is not possible to entirely disguise their character. Yet with a little ingenuity he may secure a very passable result. The large masses will consist of many bricks cemented together in the burning, thus showing a decided, if rather artificial, stratification. These pieces he should place with their longer joints horizontal, or at such a slight tilt as he may decide. He may be tempted to so place them that their component bricks stand on end, with a view to availing himself of the crannies between them, but that would be a bad arrangement, as will be understood from the foregoing considerations.

There is no need to outline the back margin of the bank with rocks. The soil there may just run off into the level of the ground.

When the structure of soil and rock is finished

the gravel floor of the rock garden may be laid in the way directed for path making.

I need hardly warn the reader against the use of water-worn rock pieces which have a uniform pebble-like shape. I have seen them used, but only with grotesque effect. On the other hand, a few rounded pebbles introduced along the margin of the rock structure are not out of place, suggesting, as they do, an old water-course, and serving to retain soil washed down from the higher levels.

Planting — Autumn is the time for planting, and no special directions are needed for the practical work of putting the plants into the soil. It should be done in the same way as when planting a bed or border. The mode of construction I have described ensures that there is ample depth of soil.

Discrimination should be used in selecting the plants for special positions. The smaller subjects like sedum, saxifrage, and sempervivum will thrive when rooted in crannies, and some on the porous surface of the rock itself, as witness the common house-leek. A few of these plants may be established at the margin of the rockwork and allowed to

intrude upon the gravel within limits. They will soften the hard line where rock and gravel meet.

Plants of trailing habit should be put near the top of a miniature precipice, over which they will hang their flexible shoots and in due course paint its surface with brilliant colour.

Tall plants should go mostly to the higher levels. Give each plant elbow-room to allow for growth and expansion, but plant fully, so that when the plants are established there shall be little bare soil visible. Chinks in the vertical surfaces should not be neglected — they will carry their share of plant life, if care be taken to insert the roots and ram the soil well in contact with them. Ferns will thrive in similar places, and, preferably, they should be located in the shady corners.

The choice of plants is a vast one, but it is well for the novice to limit it at first to the more hardy kinds, than which he will find none more beautiful.

At the back of all, on the topmost level, small flowering deciduous and evergreen shrubs may be associated with tall perennials like starwort and snapdragon.

Space and means may forbid a very ambitious effort, and it may thus be necessary to confine the rockwork to a single bank against the boundary wall or fence. In that event it is well to clothe the artificial background with ivy or other creepers.

The rock garden should not end abruptly. It is better to let it gradually merge into the general surface of the ground, some detached pieces of rock being placed on the level beyond the raised part of the rock garden, just as we should find in nature. Many alpine plants will thrive perfectly well on the level, if they are protected from the encroachment of coarser plants. Thus these outlying rock pieces may be enshrined in masses of gentian, aubrietia, or saxifrage, which, unconstrained by any rocky limits, will spread into wide cushions of colour.

Learn to know your plants by sight and don't label them. The appearance of a labelled rock garden in the spring, before the plants have put forward their foliage, is depressing, and reminiscent of the auction room.

Wall Gardens — Nature has shown us how she can clothe an old wall with her treasures,

and the plants thus naturally established often display a charming habit in adapting themselves to their artificial home. Who has not seen a ruined wall topped with wallflower, snapdragon, toadflax, and sedum, or hung with the charming foliage and quaint, lipped flowers of *Linaria Cymbalaria?* To imitate this is not difficult, but we require the right kind of wall; not the new, neatly pointed red brick affair, but a thing of cracks, crevices, and crannies, such as we find enclosing some old country garden. Given this, the rest is easy. We have only to rub some fine soil into the chinks and to sow the seed of such plants as we desire, covering them up with soil to prevent the birds abstracting them, and in due course we shall have our colony of alpines.

If no wall exists, then we must build one, and in doing so we may make provision for as much plant life as we please. The wall may be of concrete, rubble, rough stone, or old bricks. Of these, perhaps the best are the last three, though with bricks, unless ample spaces are left between them, there would be difficulty in finding sufficient lodgment for the plants. Stone and rubble, using irregular

blocks, would give opportunity for earth pockets and crevices of various sizes. There should be no pointing, and only so much mortar used as is necessary to secure stability. Large spaces may be filled with the compost recommended for the rock garden and then sown. The smaller crevices may be filled with soil mixed with the seeds. The sowing should be done in the autumn.

CHAPTER XII

The Rose Garden

In a small garden there is nothing to be gained by providing a separate place for the roses; on the contrary, they may be freely associated with the other flowers in bed and border with the best effect.

Just why it became the practice in days gone by to give the roses a department to themselves is not clear, though there seems to have been some idea that the rose standard did not harmonize with plants of bushy habit. In the present day no such consideration prevails, and gardeners do not hesitate to admit the rose into every part of the garden.

We cannot have too many roses, and there is no position where they are out of place. The walls and fences deserve their share. The house walls are never so beautiful as when clothed with healthy and prolific climbers. In the shrubbery they help to redeem the

masses of monotonous green foliage. On the lawn, as standards or pillars, they add a welcome note of colour, and in beds and borders they contribute their quota to the general effect. Even as hedges, roses have their use, and for arches, pergolas, and festoons no more charming climbers are available. Pegged down, or trained over an ironwork dome, they make glorious bushes of flower and foliage.

I have written enough to show that the rose has no claim to be kept in a place by itself, yet this does not imply that the rose garden is necessarily a superfluity where ample space exists. Indeed, there is something extremely attractive in a well-planned rose garden. It is a practical token of homage to the queen of flowers, and it demonstrates that the rose, before all other flowers, can be grown in a place by itself without producing a monotonous effect. This follows from its variety in form, colour, and foliage.

A sunny site should be selected for the rose garden, and, following ancient usage, we cannot do better than lay it out formally. I am no advocate of a formal garden in its severest mood, but formality is not the product of

shape alone in the garden details, as I have elsewhere shown. I can conceive of beds and borders of informal outline treated quite formally in the planting and accessories. I cannot imagine any benefit to the roses from planting them anyhow. We know little of the rose in a state of nature, for our garden roses are mostly a product of the nurseryman's art. They are perhaps the most artificial of all flowers.

We shall not therefore be in danger of outraging good taste if we make our rose garden on formal lines, by which I mean if we plan it on a symmetrical basis.

The most common method is to cut the rose beds in grass, and there is much to be said in favour of grass as a setting for our roses. In evolving a design it is well to observe certain points now to be mentioned. The beds should not be elaborate in outline nor too small. The groups should show a geometrical relation between their component beds in the way I have advised for groups of flower beds generally.

The illustration (Fig. 46) shows typical rose gardens as I might plan them on a grass space, and it should be noted that the outlying

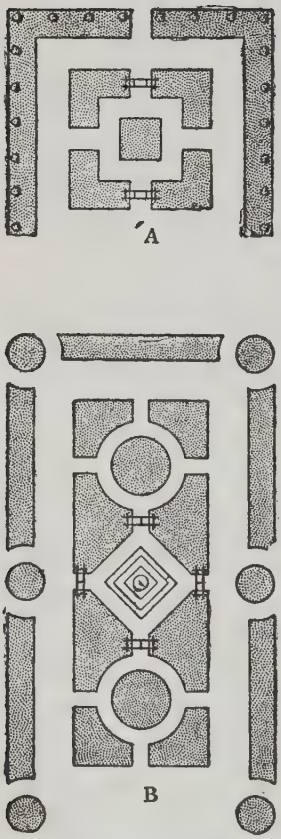


Fig. 46.— Rose beds in grass

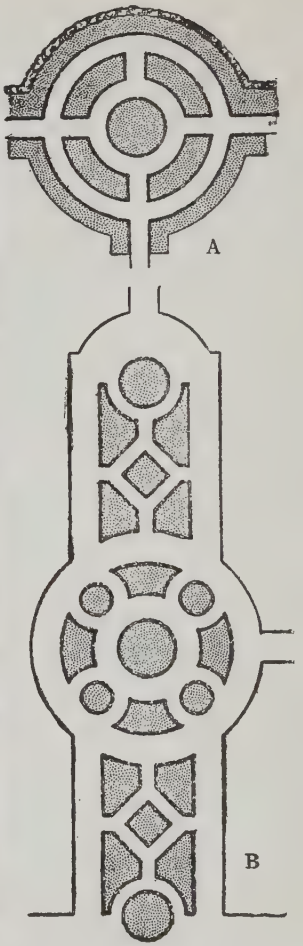


Fig. 47.— Rose beds in gravel

borders give a sense of enclosure and sanctity to the whole arrangement, which may be enhanced by planting their outer lines with standards or pillars.

The introduction of arches at suitable points is an excellent device for obtaining height.

The necessary shelter in exposed situations may be contrived by the use of rose or sweet-brier hedges, or of roses trained upon a skeleton fence.

It is not unusual to carry a path through the rose garden, or to set it where two paths intersect at right angles. The point of intersection is sometimes marked by a sundial or vase. When a path or paths lead into the rose garden, the beds may be separated by gravel, thereby excluding grass altogether.

Such gardens are shown in the accompanying illustration (Fig. 47). I have no quarrel with that arrangement, and it may be made dainty and trim by the use of neatly clipped box edgings. One loses, however, the delightful background an emerald turf supplies.

There is no reason why the rose garden should take a shape having equal dimensions both ways. It may be long and narrow, and I am not

sure that that is not the best form, especially when space is restricted. It can be better brought into harmony with the adjacent parts of the garden. As a walk, too, it is less tedious to traverse.

Roses make considerable demands upon the

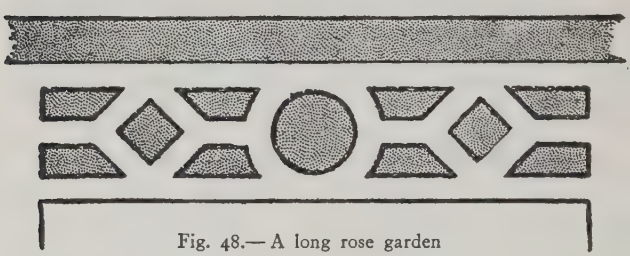


Fig. 48.— A long rose garden

soil, and therefore rose beds and borders should be deeply trenched in the first instance, and treated liberally with manure. The common impression that clay soil is the best for roses is not altogether correct. They will thrive in almost any soil, provided they are well supplied with fertilizing matter. In light soils the manure we give them is not retained so long as in heavy soil, and thus, under careless culture, they may suffer starvation. For this reason, if the soil is sandy and light, it is well to add a proportion of heavier material

to give it tenacity and retentive quality, and in manuring to use cow manure. If the garden is made upon turf, then dig in the sods, and add any other decaying vegetable matter you may have available.

On heavy land it may be necessary to drain the rose bed. This may be done by throwing out the soil to a depth of three feet, adding nine inches of rubble or brick rubbish, and then filling up with soil. In such case it is well to bring the level of the beds well above that of the ground. Thorough preparation of the rose bed is the surest guarantee of future success.

Planting should be done in the autumn, preferably between mid-October and the end of November, though it may be done later if the winter be open.

The operation of planting cannot be too carefully conducted. Holes should be dug of ample size, with the bottom formed dome-shaped to facilitate arranging the roots.

These should be separated and distributed radially over the bottom of the hole. Fine soil should then be placed over the rootlets, moving the stem of the plant up and down

to allow it to penetrate among them. The remainder of the soil may then be added and firmly rammed down. It should not be heaped round the stem, but left slightly depressed so as to facilitate watering. It would appear that there is little to be gained by care in spreading the roots, experiments showing that careless planting is equally favourable to the plant. Be that as it may, there is no doubt that the care devoted to arranging the roots as widely spread as possible at the foot of the hole renders excellent service in anchoring the plant to the soil, enabling it the better to withstand the buffeting of the wind. If no rain follows planting, it is advisable to give some water about a week after, and a mulching of manure may then be put around each plant to afford protection from frost.

Fig. 49.— Planting roses

Roses must not be crowded together too closely. Standards should not be less than

three feet apart, and bushes not less than one and a half to two feet.

I question whether it is ever desirable to use standards of greater height than three feet. The lanky, bent specimens one sees occasionally pointing skyward are truly ugly, and have no *raison d'être*.

Standards look better in groups than in single file, though the latter arrangement may sometimes be desirable when it is intended to introduce a well-marked line.

The disposition of the plants in a rose garden is largely a matter of taste. With many beds to fill, we may devote each bed to several roses of the same colour or kind, and thus get our colour effect in masses. On the other hand, with a less elaborate garden, contrasting or harmonizing colours may be associated together in the same bed or border. The range of colour in roses is so great and so harmonious that one can hardly make a mistake, except perhaps in associating the magenta-tinted varieties with reds and pinks of purer hue. The former, carrying as they do a note of blue, go better side by side with whites and yellows. The presence of too large a

proportion of whites is to be condemned, as they tell more strongly in the picture than coloured varieties.

China roses, with their dwarf habit, beautiful foliage, and brilliant colours, should not be overlooked. They may be used in beds by themselves, in the front part of the borders, or between standards where the climate allows.

CHAPTER XIII

Water in the Garden

There is something so delightful in the living, moving presence of water in the landscape that gardeners may be excused their desire to introduce it into their flower ground. Yet in a garden of limited size it should be recognized that the effect which appeals to us amidst natural surroundings is practically unrealizable. At the same time the conditions may be such that water can be introduced without appearing to be too artificial a feature. This applies particularly to gardens bounded by a natural stream or through which such a stream passes.

When the water has to be derived from the domestic supply and contained in artificial ponds it is a different matter. But even then it may be possible to avoid offence provided the gardener contents himself with simple arrangements. Any sense of artificiality that may arise can be counteracted by the inherent

interest in luxuriant water growth and the delightful blooms we get from such purely aquatic plants as water-lilies and callas.

It may, however, be stated at the outset that the making of a water garden is a simple matter compared with its efficient maintenance. No gardener should lightly embark upon the task unless he is prepared to give unremitting attention to his water plants and to their artificial homes. This implies frequent changing of water and cleansing of ponds.

In town and suburban gardens organic matter, dead leaves, and other undesirable things are wafted by the wind or fall upon the water surface, where they remain to decay and defile the water.

When a running stream is available, these drawbacks operate less prejudicially, though they are not altogether absent.

I shall first consider the case of a garden bounded by a stream at its far end. We may assume that the water is pure enough for our purpose. The probability is that the gardener would have no rights over the water, but also that no objection would exist to his diverting some of it through his garden. In such an

event he might excavate a backwater, say with an extension in the form of a bay, as shown in the illustration (Fig. 50).

By this means he would obtain a piece of running water (A), and a piece (B) more or less stagnant, but not so stagnant as to require any special device for changing it. The depth need not exceed eighteen inches. The island C would be useful for treatment with bold waterside plants, and the margins of the backwater and pond could accommodate others of less sturdy growth. Clear spaces should be left for access to the water's edge and to permit of the plants being seen. A small collection of dwarf hybrid nympheas may be established in the pond B and in the backwater, with which might be associated our common native pond lily. Other plants may be added if

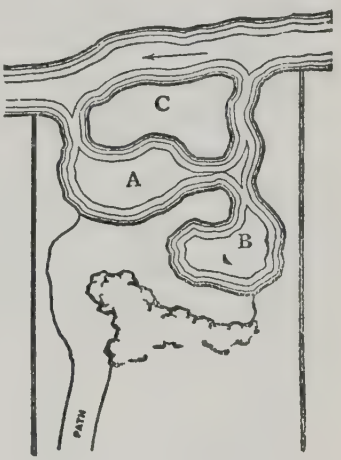


Fig. 50.—A water garden

space permits, including such interesting subjects as the pickerel weed, the flowering rush, and water buttercup. Typha and swamp mallow might be planted along the fence line at B.

Irises will thrive at the margin of the water, as well as such favourite flowers as phlox, trollius, spirea, and a host of others. With very little trouble in the making and common-sense management, a piece of water of this kind could be made a source of perennial interest. When all is complete and the plants are established it would only remain to keep the entrances clear and to remove all rubbish which might find access to the water. No deciduous trees or shrubs should be placed near the water, for reasons already explained.

A water system of this kind might be wedded to a rock garden with a good effect.

In excavating the water bed the sides should slope gently to the edge, or trouble will ensue by the banks breaking away and fouling the water. This also ensures that the soil is waterlogged for some distance from the water's edge, and is therefore in a condition for supporting a colony of semi-aquatic plants.

When a stream intersects the garden, a rather more ambitious effort is possible.

The general treatment should be such as to considerably expand the water area, and this may be done by adopting an arrangement like that illustrated in Fig. 51, in which a lily pond is made in that part of the garden beyond the brook, having inlet and outlet, thus securing a water circulation. Bays should be formed on the near side. Communication across the stream may be by means of a simple bridge, or stepping-stones if the water is shallow. The gardener should resist the temptation to give a "rustic" character to his bridge. It should be a plain affair, well and firmly built, as befits its purpose, and provided with a hand-rail on either side. What has been written in regard to making and plant-

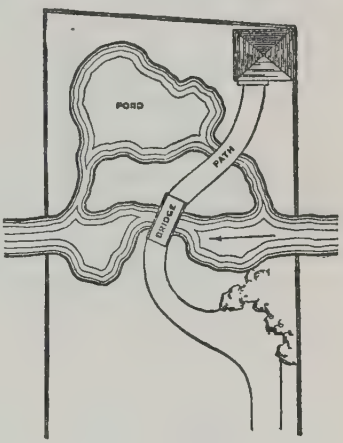


Fig. 51.—A water garden

ing in the previous case applies to this one also. As water gardening is never likely to engage the attention of more than a minority of gardeners I need not multiply examples. The hints I have already given will prove sufficiently instructive to those who may wish to avail themselves of the possibilities of a stream accessible from the garden.

I shall now refer to a type of water garden which is frankly artificial and depends for its water supply on the kitchen tap or the pump. This last condition demands that we should study economy of water, and that can best be done by devising what I may call a circulating system.

The first consideration will be the planning of the ponds (for such they are) and in that we must be guided by the levels in our garden and our desires in the matter of water area.

If there is a distinct slope in the garden surface, so much the better; it will help us to a simple arrangement for running off the water, as must be done from time to time to keep our ponds clean and their tenants in healthy condition.

The waste or overflow from the pond or

series of ponds must be provided for, and when the garden slopes toward the house the most convenient way is to carry it into a gully in

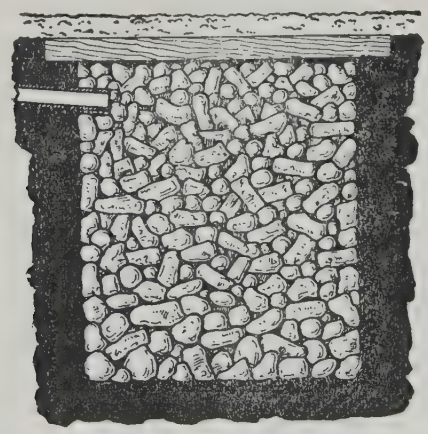


Fig. 52.— Soak-away drain

connection with the house drainage system. When the slope is in a contrary direction the best expedient is to make a "soak-away" drain, as shown in the illustration (Fig. 52). This is merely a pit sunk in the soil and filled with rubble, into which the overflow pipe is conducted.

The ponds must be constructed with an impervious bottom, say by the use of cement or concrete.

Fig. 53 shows both the mode of forming the bottom and of building up the sides, and calls for little by way of description. If rock or rubble sides are used, as in D, they must be built in cement, care being taken to make the joints watertight. The floor may then be made with six or eight inches of concrete, faced with cement. The surface should not be finished to a dead level, but should have

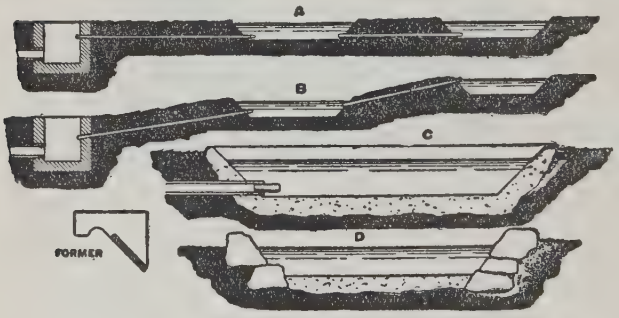


Fig. 53.— Ponds

a slight fall toward the outlet, to facilitate running off the water.

If the pond sides are built of cement, C must be followed, making the edges battered, and finishing them neatly at top with a rounded nosing, which can be done with a former of

wood like that illustrated. Fresh cement of good quality should be used, tempered with a third part of sharp sand.

Pipes for inlets and outlets should be inserted when the sides of the pond are being made. If a single pond is installed it will only be necessary to carry a waste-pipe from its bottom to the drain. This should be done in a straight line, if possible, to facilitate unstopping in case of obstruction. The most suitable piping is iron gas pipe of not less internal diameter than one and a half inches. A plug must be provided to close the inlet, and this may be a simple cone of wood fitted to the bore of the pipe.

When two or more ponds are made, they should be connected by piping into a single system, the waste-pipe connecting the one nearest the drain to it.

If all ponds stand at the same level, the connecting pipes may enter and leave at the bottom, but if the levels are stepped, as would be the case on sloping ground, the overflow from each pond to the next lower one of the series must be placed at the water-line, otherwise the water would all flow to the lowest

pond. This point is made clear in the diagrams A and B. The filling up and renewal of the water may be done conveniently with the garden hose.

Although I have applied the term "circulating system" to the arrangements just described, it should be understood that they are not adapted to ensure a constant movement of water, which is quite unnecesly sary. Water-lilies will thrive in perfectly stagnant water which has not been changed for months, but it is neither wholesome nor pleasant to allow the same water to remain in the ponds indefinitely. Hence the usefulness of some means for running off the foul water and refilling with fresh.

When the gardener has done his work, he should fill the ponds, mark the water-level, and allow them to stand for a week, noting whether there is any leakage, which would show itself by a drop in the surface level. If all is satisfactory, the water may be run off and the ponds will be ready for planting.

The end of April is the best time for planting

the hardy nympheas. The soil may be a compost consisting of:

Pond mud	2 parts
Loam	1 part
Leaf-mould	1 part
Road scrapings	1 part

If the first ingredient cannot be obtained it may be omitted and double the quantities of loam and leaf-mould substituted.

A layer of drainage material (broken tile or brick rubbish) should be spread upon the pond floor, on which the compost should be heaped to the water-level height at the points where the plants are to be placed. The water may then be admitted and allowed to stand for a couple of days to assume the temperature of the atmosphere. The plants may then be inserted in their mounds, which by this time will have settled down considerably below the water-level.

The water may be run off and renewed at fortnightly intervals, or even less often if it shows no tendency to become fouled. Twice a year the ponds must be thoroughly cleansed to remove decayed vegetable matter, leaves

and rubbish which are certain to accumulate at the bottom.

The introduction of animal life is useful in restraining undesirable vegetable growth, water-snails particularly. Goldfish will do well even under somewhat unfavourable conditions of stagnation, and are equally useful for the purpose.

The matter-of-fact gardener may question whether all this trouble is worth while for the purpose of growing a few water plants. I think it is. Indeed, the sight of only three or four good, healthy water-lilies in flower in one's own garden is sufficiently interesting to constitute ample recompense for some small initial trouble and outlay, and the enthusiastic flower-lover will not grudge the subsequent labour of tending them.

I know one such person who grows a collection of miniature nympheas in tubs sunk in the ground with most gratifying success. Where space is limited his example may be followed. The best plan is to excavate a deep hole, say twice the depth of the tub, and to fill the bottom with rubble, so that when the tub is bedded upon it the rim will stand

just above the level of the ground. A centre-bit hole must be made in the bottom of the tub and fitted with a plug long enough to give a good hand-hold. A piece of perforated zinc should be nailed over the hole at its under side, to prevent coarse débris running through and choking the drainage material below. These expedients, simple enough to put into practice, are all that is necessary to provide for an occasional change of water.

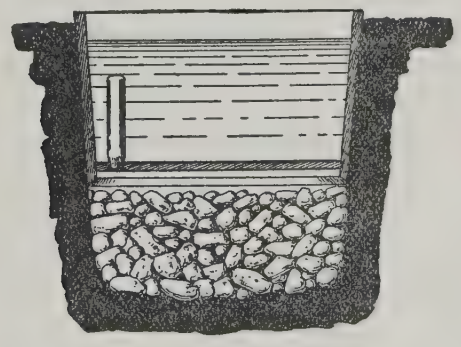


Fig. 54.—Tub for water plants

The hard circular outline of the tub is the only objection on the score of appearance. The best way to mask it is to pack some boggy soil around and between the tubs, and to grow in it small water-side plants, which, if suitably

chosen, will spread over the rims and hide their outline, without unduly excluding light and air from the water plants.

If possible rain-water should be used. The nympheas particularly are intolerant of hard water. When introducing fresh water it should be run in slowly if it is sensibly colder than the atmosphere, otherwise the plants may be chilled and checked in their growth.

It is quite easy for the supply to dribble in from a hose, the waste plug being loosened to permit the foul water to escape slowly at the same time. Besides the nympheas there are many other interesting if not as conspicuously beautiful plants that may be grown in the water garden. The calla has already been mentioned, and is perhaps best kept in its pot and plunged into the water, as it will not stand the winter out of doors. The English arrowhead is a bold, handsome, and desirable plant, particularly in its double form. Typha — the reed-mace (commonly called "bullrush") — is easily established, and the native yellow flag, though only semi-aquatic, will thrive in shallow water on a deep bed of soil.

CHAPTER XIV

The Vegetable Garden

The owner of a small plot, who loves his flowers and values a completely artistic general effect in his garden, is usually content to leave vegetables alone. In town and suburban gardens I think he is well advised, because the atmospheric conditions may not be favourable to the growth of culinary plants in that state of cleanliness which fits them for food.

But, leaving this consideration out of the question, it is doubtful whether the results are commensurate with the trouble involved, when you can buy good vegetables cheaply.

I would say nothing to deter the enthusiast from taking up vegetable culture if his tastes lie in that direction. It is as interesting to some people to grow a cabbage as a chrysanthemum.

There are gardens and gardens, and, given a pure atmosphere and sufficient space, the

vegetable garden may find its legitimate place and usefulness. The reader who has studied the general principles I have applied to the designing of a flower garden will have noted that I advocate placing the principal flower borders near the north boundary, wherever that may come, and that I gave good reasons for running the principal path alongside or between them. Generally this path starts from the house and terminates somewhere at the remote end of the garden. If the vegetable ground is to occupy its usual place at the end of the plot, the main path may continue into and through it. On the other

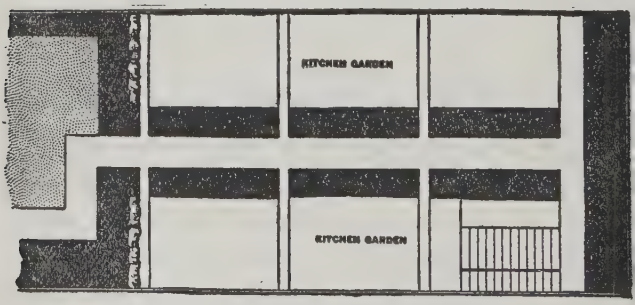


Fig. 55.— Borders through a vegetable garden

hand, it may be more convenient to approach the vegetable plot by an offshoot from the

main path. In either case I advocate the use of a device to which I have already referred. This consists in continuing the flower borders on both sides of the path through the vegetable plot, in the way shown in the illustration.

The result is to extend the principal garden vista in length, thus increasing the sense of space, and, at the same time, to screen, more or less, the part devoted to vegetables.

It is true that these borders absorb a certain amount of space, but that must be allowed for in fixing the dimensions of the vegetable plot. To complete the scheme it only remains to add a transverse hedge or other barrier at the near end of the vegetable plot and the thing is done. These supplementary borders, if preferred, may be reserved for flowers intended for cutting, and some part for raising seedlings, striking cuttings, and other utilitarian purposes.

I have in mind a charming suburban garden arranged in this way, in which the kitchen plot with its borders of bold perennials, backed by espaliers, and edged with herbs, is not the least interesting part of the garden.

But there are many other touches the gardener may give to his vegetable ground to

bring it into harmony with the garden as a whole. A bower-like structure can be made to support a colony of scarlet runners, whose coral flowers will give a piquant note of colour to an uninteresting corner, the while it provides the gardener with succulent food. The bold, handsome foliage of the rhubarb, and the rambling growth of the vegetable marrow are good to look upon, and did they not contribute to our table they would assuredly be grown for their beauty alone. And what is more graceful than the fairy foliage of the asparagus? Bearing these points in mind, therefore, the gardener may make picturesque capital out of his kitchen garden tenants if he is careful to dispose them to advantage. I do not wish it to be understood, however, that any steps taken in that direction are to be in opposition to the common-sense principles of vegetable culture.

The gardener with a heart attuned to vegetables will find places for a few fruit trees, which are always useful in the garden picture. The abundant blossom of his cherry, apple, and plum trees is a valuable asset at a time of year when flowers are scarce, when the borders

have scarcely awakened from their winter sleep. What is more beautiful than a spray of rose-flecked apple blossom arching the path, or, later, the sun-kissed fruit showing its ruddy spheres amidst the darkening foliage?

And if the flower garden is to invade the vegetable plot, why not the converse? Fruit trees upon the grass plot have just as much value as the che tnut or laburnum, both for flower and shade, and against a north wall they will cover much uninteresting brick and mortar, and yield their crop without detracting from the usefulness of the border for flower-growing.

Even the boundary hedge between flower and vegetable plot may be made of espaliers, or such easily trained fruit bushes as logan-berry, wine-berry, and blackberry.

The gardener of resource will find no difficulty in putting these hints into practice. There is nothing new in them. The association of flowers and vegetables in the kitchen garden was common in the walled-in gardens of a century ago; but the practice was not introduced with quite the same objects as those here detailed, because in those days the

vegetable ground was a thing by itself, and no one thought of blending it with the flower ground.

Apart, however, from this question of harmonizing the two main departments of the garden, I would advance the plea for neatness, order, and picturesque effect in the kitchen garden. The soil should be constrained by edgings to keep it off the paths, and for this purpose there is possibly no better material than ordinary builder's bricks laid on edge. Just inside the brick line a row of parsley plants will make a fresh, massy, green band, and elsewhere the other herbs may help to outline the garden divisions and give finish to the beds; at the same time all will be conveniently accessible.

Let us now look into the more practical details of the kitchen garden design. It is good practice to subdivide the plots into separate beds with narrow paths between, as shown in Fig. 55. Such beds may have dimensions determined by the space available and by the owner's intentions as regards the crops to be grown.

In a small vegetable ground annexed to a

garden of the size under consideration, a width of twelve feet in most cases would be a good dimension to adopt, the length of the bed running transversely and being determined by the width of the ground from path to boundary fence. The transverse paths need not be more than eighteen inches wide, and may be of cinder, if no better material is available. The object is to give easy access to the bed and to permit the use of the barrow without having to run it over loose soil, and thus to lighten labour.

At the same time, this orderly subdivision of the ground improves its appearance, giving a business-like aspect to the garden and facilitating systematic cropping.

A space should be reserved, preferably screened off, for the deposition of rubbish, and for the storage of manure, flower-pots, stakes, and other accessories which careless gardeners are too prone to leave about in odd places.

The box edgings one finds in old gardens — "as prim and square-cut as a Puritan pastor" — are charming to look at, but they are charged, and probably rightly so, with harbour-

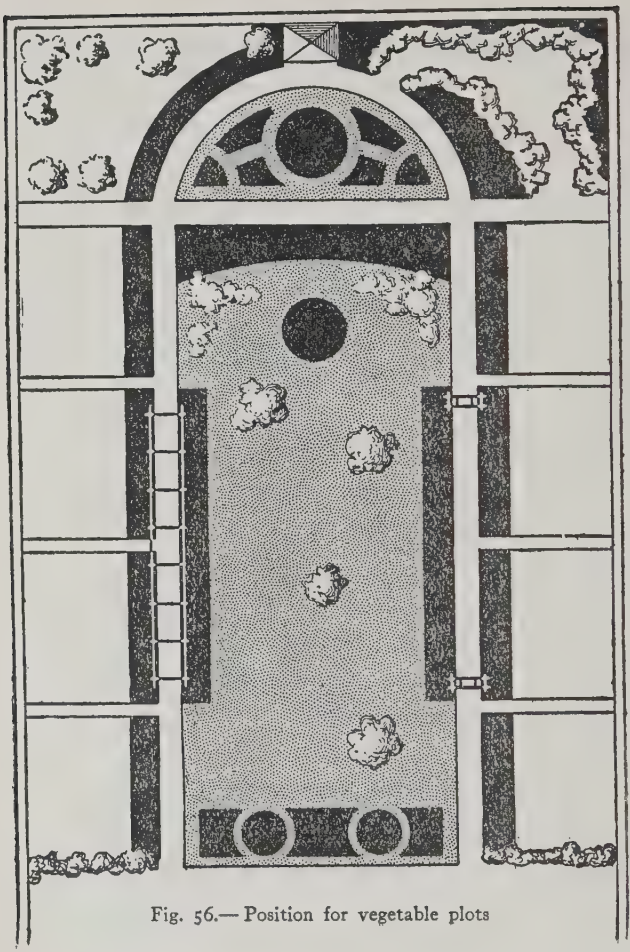


Fig. 56.— Position for vegetable plots

ing snails and other animals which prey upon our culinary plants. Still I am not sure that I would not put up with the havoc of these marauders to enjoy the solid green outlines and the air of old-world methods these edgings suggest.

There are other modes of associating the vegetable garden with the flower ground. When the whole plot is wide in relation to its length, it may be convenient to reserve a strip of ground along one or both sides for kitchen garden purposes, and in that event the treatment may be based upon the design here illustrated, the object, as before, being to retain a certain decorative quality without detriment to practical requirements. The method of doing this is made sufficiently clear by the diagram.

If space and other conditions suit, there is no objection to cutting off the kitchen from the flower garden entirely by a separating hedge; because in the case under consideration there would be little gained by blending the two, since the additional vista so obtained, being in a transverse direction, is comparatively short. In selecting the site for the kitchen garden the question of aspect must not be overlooked, particularly as it affects

that part of the flower garden adjacent. In the case just considered the hedge shadow must be reckoned with, and for that reason the north side of a garden having an east or west aspect would be the best position for the kitchen garden, other things being favourable. With a north or south aspect the point would not arise.

In gardens of irregular shape it is sometimes possible to cut off a triangular or awkwardly shaped piece for the vegetable plot, thereby giving better form to the rest. Examples of this mode of treatment will be found in the plans which follow.

In the actual making of the ground the gardener must follow the directions already given for trenching and manuring.

If the garden is of any considerable size a tool shed, which might be used also as a potting-shed, is a great convenience. It may be a very simple structure; but it is well not to disfigure it with corrugated iron or other unsightly material. A thatched roof of straw or reeds would convert it into an almost picturesque feature, and there is no reason why it should not support a graceful flowering climber.

CHAPTER XV

Glass

At the risk of creating consternation in the minds of those enthusiasts who adore their little glass houses, I must say that I cannot reconcile the greenhouse with the garden beautiful. My remark, of course, applies only to the small garden, in which I have never seen such a structure that was not an eyesore. Its white paint alone condemns it; but that we can alter. Not so its rigid, spidery lines and glinting glass panes. Yet I admit its utility, and I can realize the pleasures that come to the man who carefully tends its crowd of occupants. My quarrel is with the thing itself. If I were advising the owner of a small garden plot on the question of installing a greenhouse, I should say "Don't," because I know that it is possible to have a garden gay with interesting flowers from March to November without glass.

On the other hand, if the gardener desired to specialize in chrysanthemums, or some other flower or flowers for which a greenhouse is a necessity, I would concede the point, regarding it as a compromise; but I should not expect him to achieve a very notable result in the garden picture.

I would therefore ask the would-be gardener to consider whether he really wants a greenhouse, and if he decides in the affirmative, I would tender him such advice as the following:

1. If possible—i. e., if the aspect is suitable—put the greenhouse against one of the house walls, where it will merge into the main structure, and thus lose some of its identity.

2. If that is unrealizable, place it where it will be possible to screen it from view, so that it does not become a conspicuous object in the vista as seen from the house.

3. Select a simple and unpretentious design, preferably a "lean-to" or "three-quarter-span" pattern, and put it against a boundary fence or wall. These patterns are infinitely preferable to the high-pitched, ridge-roofed, doll's-house pavilions designed to evoke the admiration of the uninitiated.

4. Paint the outside woodwork a pleasant shade of green, not grass colour nor *eau-de-nil*, but something in between.

By observing these hints he may succeed in taking the sting out of his glass box. The gardeners who paint their greenhouses white, picked out with lines of "Reckitt's blue," hardly realize the crime they commit. They are blinded to the inconsistencies by the glory of the structure itself, and think not of it as an element in the picture. For the same reason they give it a place of honour in the centre of the garden's width, and contrive that all roads shall lead to it.

The humble garden frame is another matter. It sits snugly on the ground, and does not take on airs. Its usefulness no one can deny, and its place is in the vegetable plot.

If, in spite of all, the gardener decides to invest some part of his capital in "glass," then let him beware of the cheap, jerry-built, stock houses whose pictures adorn the advertisement pages of the gardening journals. They are not all bad, but they all have the same family likeness on paper, and the inexperienced buyer is tempted to buy the largest

he can get for the sum he is prepared to spend, or the cheapest for a given size.

The greenhouse at its best is but a skeleton structure, if we neglect the glass, and is an easy prey to weather influence. If framed of wood of small scantling, or of unsound quality, the decay comes sooner and proceeds more rapidly. Joints give and parts warp out of shape, "and then the deluge" in a literal sense. Once a house becomes leaky it is almost hopeless to attempt to make it sound again. Better, therefore, to do without than to install a cheap affair that will do duty only for a few seasons.

The best guarantee of quality is price and the reputation of the firm from which you buy.

The term "conservatory" is generally applied to a glass house forming a permanent annex to the house. It has the advantage over an unwarmed detached greenhouse of borrowing warmth from the house in winter, and is useful for protecting pot plants from frost. If tastefully kept and of sufficient size, it forms an excellent approach to the garden. One not infrequently finds one on the north side of

the house, where it gets no sun, and is, therefore, only fitted for sheltering a few ferns.

Builders indulge in flights of fancy in connection with the conservatory, in the form of *chevaux-de-frise*, ornamental finials, and coloured glass panes. They hope by these attractions (?) to sell or let the house. The man of taste, however, will prefer the structure to be a piece of good plain woodwork glazed with clear glass. I know of nothing more distracting than to enter a conservatory into which the sun is casting contrasting beams of blue and yellow light indifferently upon flowers and foliage. If for purposes of privacy it is desirable that the glass be translucent it is better to use white prismatic or ground glass. Leaded glass in which the prevailing tint is a pale green is not objectionable. The conservatory floor should be tiled and sloped to a gutter to carry to the outside the water spilled in spraying the plants.

CHAPTER XVI

Fences and Hedges

I have already pointed out how insistently the boundaries of a small garden declare themselves. Whichever way we turn the vista is closed by a wall or fence, and whatever expedients we adopt to render these artificial frontiers inconspicuous — whether by growing greenery over them or trees and shrubs against them — we cannot entirely keep them out of sight. I have shown, however, that by adopting a rectilinear treatment they can be made to harmonize with the garden lines. But that will not help us much if the fence itself is an eyesore. The gardener who rents the house has to take things as he finds them, but he who builds his house has the matter in his own hands, and for his guidance, therefore, I may offer some suggestions on the subject of fencing. I must make a passing reference to walls. All walls are much alike, but it is worth while to

make the wall high enough to permit of growing fruit upon it when it receives full sun. A height of six feet in most cases would be sufficient for the purpose.

As regards the fence there are two considerations — appearance and durability. The former implies both design and surface, the latter, material.

Of the woods available, oak is unquestionably the best for a fence, not only on account of its long life under all conditions of weather, but on the score of appearance. It should not be painted or its charm of colour will be destroyed. Who has not seen and admired the pearly grays and opalescent tints of an ancient park fence, and noted how admirably it harmonized with the natural growth at its foot? I know of nothing which better accords with flower and foliage than the weathered surface of an old oak fence. If the pales are cleft, so as to show the natural figure of the wood, the effect will be better and the life of the fence longer. Under ordinary circumstances a height of five feet is sufficient, but with open country around and no likelihood of intruders less height may be desirable,

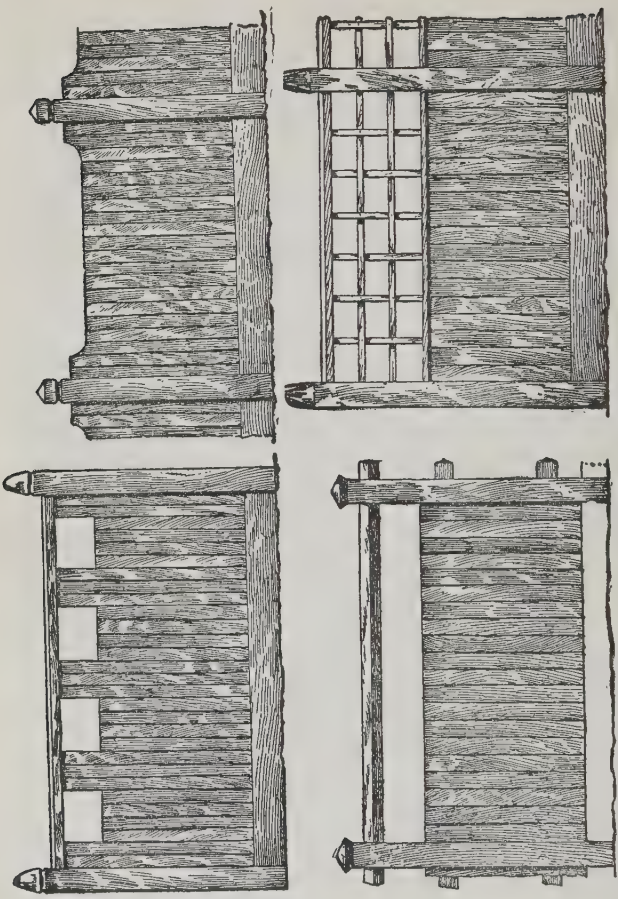


Fig. 57.—Wooden fencing.

particularly if there is an attractive landscape beyond. The character of the immediate environment should determine both the height of the fence and its design, which may be open or closed, or a combination of both.

The construction should be simple, because elaborate fencework is likely to usurp attention and to detract from the glory of the flower ground.

The practice of allowing the posts to stand above the top line of the fence, breaking the skyline, is a good one.

The designs illustrated should be sufficient guide as to the type of fence best suited to a small garden. The closed pattern has sawn oak posts and arris rails and cleft pales. If shaped at the top between the posts, as shown, its appearance is improved.

The "windowed" pattern is an adaptation of the park fence, by the addition of raised heads to the posts and a more substantial top rail. The latter should be "weathered" to throw off the rain.

The half-open fence with lattice top is just the thing on which to train creepers.

Paled fences should always have a plinth

board to protect the lower end of the pales from moisture, and to act as a barrier against burrowing animals.

Oak fences should be put together with copper or galvanized nails; ordinary iron nails cause unsightly inky stains.

If the gardener cannot afford the cost of oak, he must use larch or other boarding for his pales, but certainly he should have oak posts and plinth boards, though he may omit the latter if he stops the pales just clear of the ground. The pales will need painting either with a tar solution (a preparation of Stockholm tar, not coal tar) or with good oil paint.

If oil paint is used, the colour is important. It is difficult to select a tint which harmonizes well with flowers and foliage. Perhaps the best is a subdued green of a sagey tint. One disadvantage of painted fences is that the paint has to be renewed from time to time, and that involves the temporary removal of creepers and other plants which may have been trained over them.

Wire fences are not desirable for a permanent purpose, but are permissible when it is wished to mark the garden boundaries whilst a hedge

is coming to maturity. At the points where the wires start and end the posts should be stout and well strutted, to enable sufficient tension to be put on the wire to make it taut. The intermediate posts may be lighter, but should be firmly planted to ensure their remaining upright.

Barbed wire is an invention of the enemy and should never be admitted into the garden.

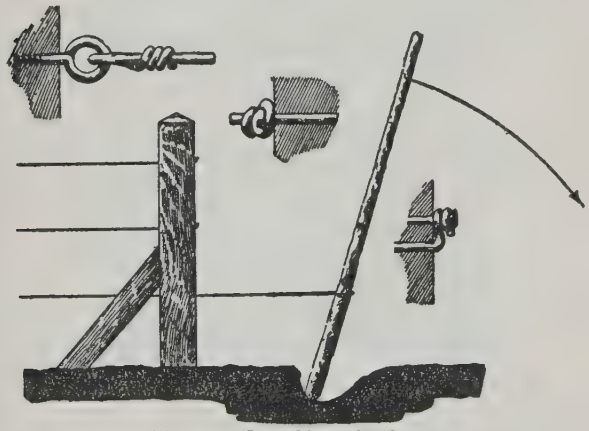


Fig. 58.— Stretching wire fencing

The ordinary galvanized iron telegraph wire (No. 8 gauge) is the most suitable. It may be attached to the stretching post by "screw-eyes," which should be galvanized, or by the

simple expedient of passing it through holes made with a carpenter's gimlet and twisting a knot in the protruding end. This should be done in the manner illustrated. The stretching is best managed with a block and

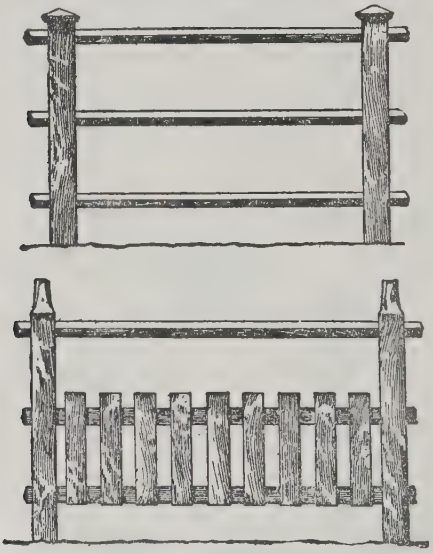


Fig. 59.— Open wooden fencing

tackle, but if the gardener cannot command the use of this appliance, he may make shift with an extemporized lever in the manner shown.

When the wire is taut, the end should be

knocked up with a hammer close to the hole and turned two or three times round a stout nail.

Kinks and bends in the wire may be rubbed out of it with the hammer handle whilst it is under tension, before the final tightening.

Two good types of open fence are shown in the next illustration, and they call for no special description. In the all-rail pattern the post heads are made separately and nailed on, their purpose being to protect the end grain of the post from the weather.

Temporary fences may be made of rough unbarked larch or other timber that may be readily and cheaply procurable. The lattice or "rustic" fence is short-lived, and in long lengths its diagonal pattern is monotonous. Its appearance is much improved by adding a top rail of halved timber flat side down.

A better type is that next illustrated, the posts being of unbarked larch, and the side and top rails of the same halved. Ordinary iron cut nails may be used with advantage, as their "rusting-in" makes them hold all the better.

In setting out a fence care should be taken

to keep a straight line from point to point, by using a stretched cord as a guide for fixing the posts. The tops of the posts should be

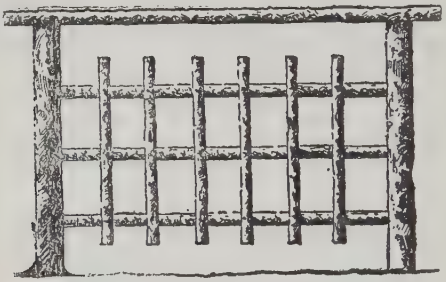


Fig. 60.— Larch fencing

adjusted in line by sighting, two T pieces being fixed as levels to work from, one at each end of the stretch. The spacing of the posts will depend upon the design and character of the fence and the length of timber purchased for the rails, but ten feet is the maximum advisable, and less is better.

Of iron fencing there are patterns for all purposes, and I need not speak of them.

Trellis — Trellis naturally falls into this section, and some words of guidance in its proper use may be useful. Ready-made trellis is so cheap that it does not pay to make it at home when the ordinary diamond pattern is wanted.

In erecting a screen of trellis a well-framed support should be provided, as there is very little strength or stiffness in the trellis itself. The rule should be to support all the edges by allowing them to butt against the centre of the frame, securing them by fillets nailed thereto.

The practice of leaving a raw edge at the top is slovenly, and leads to the premature decay of the trellis. All trellises should be painted with two or three coats of good oil colour, well worked into the angles at the

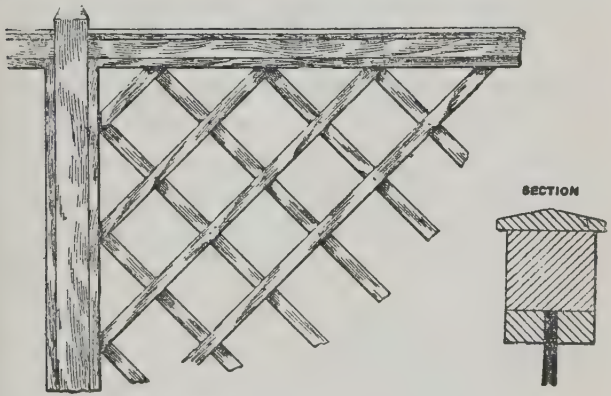


Fig. 61.— Construction of trellis screen

crossings, for it is there that the rain finds its way in and starts the process of decay.

The diagonal pattern has come to be so common that most gardeners accept it without question, but where much trellis is used it looks better arranged with the laths vertical and horizontal.

If the gardener is handy with his tools, and blessed with sufficient leisure, he may try his hand on "woven trellis," using cleft oak laths and working on the plan illustrated in Fig. 57. He must design his squares of sufficient size to admit of bending the laths without difficulty, and he should pin them at their crossings with oak pegs. A trellis of this kind will not require to be painted, and it has a character of its own which raises it far above the machine-made article.

I need hardly add that the interlacing may be omitted and the laths joined up in the ordinary way, using either oak pegs or galvanized nails.

Hedges — We may consider hedges as living fences. They not only serve to mark the garden boundary and the subdivisions of the garden, but they materially assist us in the garden picture. I know of no better background for a wide herbaceous border than a

well-grown hedge, provided no wall is available. Hedges, however, occupy more width than fences, and we must allow for this in our planning. Also there must be allowance for lateral growth beyond the width to which we intend to train the hedge, because we cannot trim at frequent intervals. Also something additional should be allowed to keep the flowers outside the radius of the roots of the hedge plants.

As wind-screens hedges are superior to fences because they allow air to filter through, and thus reduce the velocity of that which passes over them.

Of hedge plants commonly in use nothing beats privet. When properly cared for it is very effective as a screen, and it grows rapidly. Moreover, it thrives in almost every kind of soil, and is happy alike in shade or sunshine, and does not suffer from cold or rough winds.

Thorn is of less rapid growth but makes a thoroughly business-like hedge, and, owing to its spines, cattle rarely attempt to break through it. If well trained from the first so as to make the bottom full and close,

it will exclude even the "harmless (?), necessary cat."

Of evergreens, hemlock, box and arbor-vitæ are all admirable, but slow in growth. The hardy orange (*Citrus trifoliata*) makes a dense, impenetrable hedge and is evergreen in the South but sheds its leaves in the North.

There is no reason why we should not make hedges of many of the beautiful flowering shrubs, save only the question of cost. Lilac, ribes, deutzia, snowberry, philadelphus, medlar, diervilla, flowering quince, rose, sweetbrier, blackthorn, viburnum, elder, berberis, althea, and spirea are all suitable and attractive subjects, and in the light, warm soils in the South fuchsia and hydrangea may be added to the list. I see no objection to a mixed hedge, in which several of the above subjects are associated together. There are picturesque possibilities in such a hedge that are worth exploiting.

Sweetbrier makes a charming hedge and stands exposure well, but it is unsuited to town gardens, where its viscous foliage would collect and retain the sooty constituents of the atmosphere. In planting a hedge the ground should

be trenched and manured and the plants carefully lined up. The spacing will vary with the subject, and the nurseryman will always advise on this point. The training of a hedge involves periodical trimming. In the first instance this should be directed to encouraging the lower growth, without which the hedge can never be an efficient barrier, and might develop into an eyesore. The best method is to trim to a wedge shape, tapering from bottom to top on both sides equally, and to leave the top quite sharp.

Fig. 62.— Sections of hedge

The width at bottom, for a hedge which is eventually to be restricted to five feet in height, need not exceed two feet. The tops of the plants should not be touched until they reach the prescribed height.

Fig. 62 A shows the section to be worked to in the first instance. When the bottom is well filled in with growth, and the plants have obtained the maximum height, or have sprung above it, the top may be cut to a uniform height, and dressed flat as in Fig. 62 B, or rounded

if preferred. Subsequently the sides may be trimmed vertically.

In long lines of hedging it is desirable to break the top line by allowing the hedge plants at intervals to grow above the general

Fig. 63.— Hedge tops

level, trimming them into some definite form, as shown in the illustration below.

Gaps in the hedge, to accommodate through-paths, may be bridged over by training the adjacent plants into an arch, for which a temporary support would be required.

The gardener should never forget that his hedge makes considerable demands on the soil, and he must therefore not expect that flowers will thrive in close proximity to it, wherefore he should allow sufficient width in all borders which skirt a line of hedging.

Box Edgings — These are miniature hedges. The objection that they encourage and harbour

insect pests may be dismissed by the practical man, who will avail himself of the fact to search out the intruders and destroy them. The best dwarf form is *Buxus sempervirens* var. *suffruticosa*. It should be planted in April or May. A narrow, clean-cut trench of triangular section should be got out, and the box plants inserted in a close line, the soil being drawn up against them with a board held in the right hand, whilst the left forearm holds the plants in line.

Box edging should not be allowed to grow to a greater height than six inches, and the clipping should be done with care so as to preserve the height uniform, and to maintain a clean line, whether it is straight or curved. The best time for clipping is at the end of May or during the first week in June.

Fig. 64. — Planting box edging

The best shape in cross-section is square-topped with battered or vertical sides, though if it pleases the eye of the gardener the top angles may be rounded.

Ivy Edgings — These have a bold, handsome appearance, but are not suitable for gardens

of restricted size, and in town gardens they are apt to become coated with soot, nor are they reliable in the North as they winter-kill. Where space admits, however, and the temperature is safe, excellent effects may be obtained with ivy. It is only necessary to insert the plants and to peg them down to the soil, which in time they will cover with abundant growth. An annual clipping in April or May will soon produce a neat effect.

Other Edgings — Many other plants are in use for edgings, such as the ground myrtle, euonymus, heaths, and thrift, but as they present no special difficulty in management, and have no special features to commend them, I need only refer to them by name, as a reminder to the gardener who is casting about for something different.

The Verge — This makes an admirable edging where space permits, and where it is not subject to unfavourable conditions, such as the drip of trees. To ensure the best effect it should be trimmed with mathematical accuracy. As the mowing and trimming involve considerable labour it will not commend itself to the gardener of limited leisure.

CHAPTER XVII

Tile and Other Artificial Edgings

These have a wider application than the living plant edgings just noticed, and they are a necessity in a well-kept garden. When turf and soil or turf and gravel come into juxtaposition the clean-cut edge of the turf constitutes a good enough edging. The case is different where soil and gravel meet. The qualities which should distinguish a good edging are durability (both as regards resistance to weather influence and accidental fracture); flexibility, to permit it to be laid in a good curve if necessary; stability, to enable it to keep in place; and, lastly, moderate cost.

Tile Edgings — These may be just plain roofing tiles, or special edging tiles with a "fancy" margin, of which many patterns, good, bad, and indifferent, are offered for sale. Of the former I have little to say beyond pointing out that they are usually too thin to resist

the wear and tear of every-day usage, and the porous kinds are subject to fracture by frost.

Special edging tiles are made of the following materials:

Porous brickware (red).
Hard brickware (red).
Stoneware (brown).
Blue brickware (slaty blue).

The first is undesirable on account of its brittleness and liability to fracture by frost, and the last on account of its unpleasant colour, though it has the advantage of toughness and strength. Between the other two materials there is little to choose. Both are durable and unobjectionable in colour, and the gardener may decide as he thinks best. If price is a consideration, he would find the hard brickware the least expensive, though prices may vary according to district.

Fig. 65.— Edging tile

When it comes to selecting the pattern he cannot be too circumspect, and he had best confine himself to simple designs. In my opinion the tile edging is not a feature it is desirable to emphasize with

decoration. The plain scallop edge is the least offensive. (See Fig. 65.)

Even that is apt to suffer in use, and will show unpleasant gaps where some of the projections have been broken off by a chance blow of the spade.

Perhaps the strongest pattern is the so-called "cable" design, but to that there is the objection that it is a barefaced imitation of something which it never quite succeeds in simulating, and which in the reality would be a most inappropriate thing as a permanent feature in the garden. Moreover, these tiles are unsightly when laid in curves.

Generally speaking, the edging tile is something one had better do without, and as a substitute for it which has the advantage of greater substance, durability, and stability, combined with lower cost, I commend:

Brick Edgings — The common builder's red brick, as I have already mentioned, makes an excellent edging, and is capable of being used in various ways. Laid flat, its top surface level with the gravel, it becomes the margin of the path and at the same time an efficient barrier to the soil of the border. Used in this

way it may be associated with a box edging, as indicated in the illustration (A). Otherwise it may be set on edge to stand about half its width above the gravel and soil as in B. There is little to choose between these two modes of using it. Another and less familiar method is to employ it in the form of a concealed edging in the way shown at C. This makes a very neat

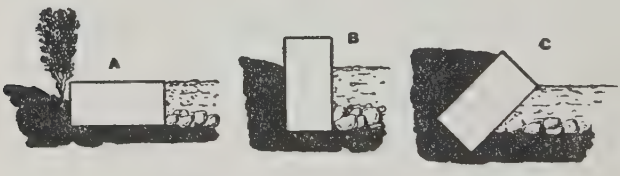


Fig. 66.— Brick edgings

and unobtrusive edging, not easily damaged. When it is carried round curves it should be laid endwise to the line, using half-bricks. This form of edging is also useful as a division between turf and gravel, as it precludes the need for much labour in trimming the turf edge, and at the same time absolutely preserves the original line.

In purchasing bricks for edgings the gardener should see that he gets hard, well-burnt ones, either wire-cut or pressed. Moulded bricks

have a hollow on one side, which makes them unsuitable.

There is, however, a kind of brick which is preferable to the ordinary rectangular brick, if cost is not an important consideration. It is the "plinth" brick. It has one of its edges bevelled, as shown in the illustration, and makes quite an ideal edging. Its price averages about fifteen dollars a thousand, which brings it materially higher in cost than the common brick, but still cheaper than the edging tile.

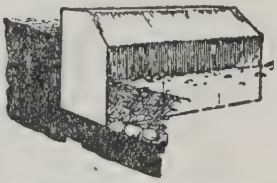


Fig. 67.—The plinth brick as an edging

Stone Edgings — In districts where stone is plentiful and cheap, it may be used as an edging, and it has the advantage of being obtainable in long lengths. It may also be worked in any section desired, or we may use it roughly dressed. The illustration on page 234 indicates some simple and suitable sections.

Sometimes the gardener is in a position to buy cheaply old stone paving, which may be adapted as an edging with good effect.

Slate has been suggested for edgings, and in

districts where it is cheap, if used in pieces at least one inch thick, it is durable and efficient; but its colour is unpleasing, and I cannot commend it for the flower garden on that account. For the vegetable ground it is quite admirable.

Fig. 68.— Stone edgings (sections)

The least expensive kind of edging is the common flint, and on the score of appearance and stability it leaves little to be desired. It should be bedded deeply, and the flints should be large ones. The practice common in some districts of whitening flint edgings gives them too much prominence, and on that account I do not favour it.

When a bed or border is to be raised above the general level the edging may be built up of flints or brickbats.

There is no special virtue in the flint, apart from its abundance and ubiquity. In districts where other natural stone is common it may be used in rough pieces in the same way as flints, with equally good effect.

Wood Edgings — The last form of artificial edging that I shall notice is the board edging. It has its usefulness as a temporary expedient when we wish to make our gravel paths before we lay the permanent edging, and it is sometimes used in kitchen gardens. Its appearance is never good, and the presence of wood in the soil is at all times to be condemned, because it encourages the growth of fungous life.

Unprepared wood is hardly good for more than two seasons. If required to last longer it must be dressed with a tar solution or creosoted.

The best way to secure wood edgings is to nail them to stout square pegs driven firmly into the soil.

In putting down edgings of every kind they should never be allowed to stand to a greater height out of ground than is necessary to form a barrier against rolling earth clods.

CHAPTER XVIII

Garden Accessories

Many a good garden picture is ruined by the introduction of some incongruous structure, which offends by reason of its design, decoration, or colour. Yet there is ample scope for useful accessories, and of these perhaps there is no better example than:

The Summer House — Modern gardeners have sadly neglected this structure, so dear to the hearts of a past generation, and it is customary to sneer at it as a place given over to insect life and mildew. If that is the state of any summer house, it is the fault of the gardener. There is no reason why it should be infested with insect life to the prejudice of its users, and it is quite easy to construct it so that it may be a dry and comfortable retreat in all weathers.

The summer house is not only a useful adjunct as a shelter from wind and the scorching

rays of a summer's sun, but, as already stated, it is a pleasing feature in the garden picture, redeeming the general flatness of the site and offering an inducement to the gardener to keep company with his flowers. Lastly, it is frequently useful in hiding some unsightly object on neighbouring premises.

I have already pointed out its utility as a natural terminus to the path. It should not be put out of sight as if it were something to be ashamed of. On the contrary, it should take its place as an obvious element in the garden picture.

In placing the summer house we have two things to consider — its relation to the garden scheme as a factor in the general picturesque effect, and its relation to the flowers as regards its outlook. It is worth some trouble to contrive that both considerations shall be met in a way to secure the best results. A summer house should not stand detached and lone like a sentry-box. If it is not convenient to place it against a boundary, it should be associated with a tree or group of trees or shrubs, but not with other buildings.

To ensure shade, its entrance should face

north or nearly so, though circumstances may not always make this position possible, in which case the difficulty must be met by the use of a porch, veranda, or sun-blind fixed over its entrance. It should stand amongst the flowers, where the gardener may enjoy their fragrance and colour, and hear the drone of bees. In fact, it is worth some little trouble to arrange that the vista from the summer house shall be one of the most picturesque peeps the garden can afford. To ensure that the summer house completely serves its purpose, it must not be made a store place for flower pots, garden stakes, and tools.

The stone and brick structures one finds in old gardens generally possess dignity and beauty. They are cool in summer and always weather-proof, but they are only suited to large domains where they are in correct scale and accord with the architecture of the house.

For the garden of moderate size, the wooden summer house is preferable, and it may be made for a tithe of the cost of the other. Its design should be unpretentious and innocent of trumpery embellishments. The "rustic" treatment favoured by commercial makers of gar-

den houses is not only expensive, but it is meaningless, inartistic, structurally unsound, and not durable. The practice of plastering these garden structures with slabs of "virgin cork" is indefensible, and should never be in-

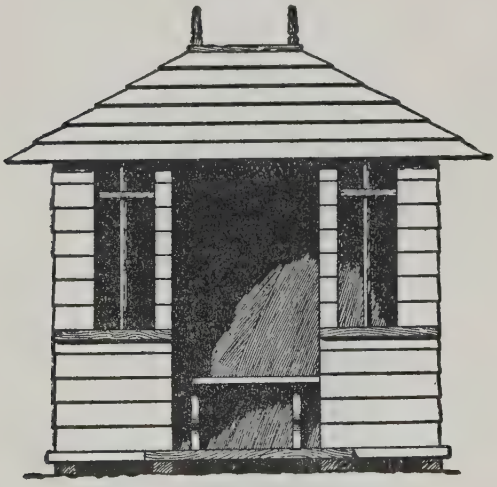


Fig. 69.— Summer house

dulged in by the man who aims at an artistic result.

The most suitable material for a summer house is oak; for the sides cleft oak slats, and for the roof sawn oak weather-boarding, straight of grain and sound. The framing may

be of rough deal quartering, as it will not come under weather influence. Nails and screws must be galvanized for reasons already given. If erected on one's own property the summer

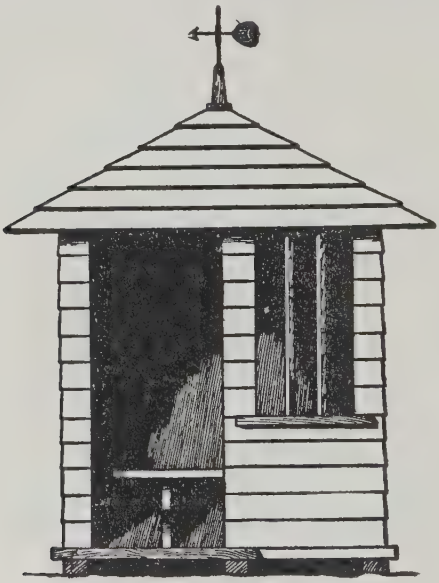


Fig. 70.— Summer house

house should be made a fixture to the soil, either by erecting it on a brick foundation or by sinking its upright timbers into the ground. In the latter case, the uprights should be made of oak for the sake of durability. A perma-

nent structure of this kind is generally more satisfactory, and if economy is not a pressing consideration, it is well to make the floor of concrete rendered to a good surface with cement, or overlaid with red tiles.

In the other event, the floor should be of stout floor-boarding, raised at least six inches above ground-level, and well ventilated beneath.

The roofing, on the soundness of which the exclusion of wet largely depends, must be done in a workman-like manner. Ample eaves should be allowed, and the boards should have sufficient overlap, and be securely nailed to the rafters.

Tarred felt and corrugated iron are quite unsuitable, the former on account of its short life and dingy colour, the latter by reason of its objectionable appearance.

Thatch of oat straw is admirable, and red tiles also make a picturesque and efficient roof covering.

The door and windows of the wooden summer house may be mere openings, which serve every purpose and look best, though when they face a quarter from which rain is likely to drift

in, and, particularly when the floor is of wood, it is desirable to adopt means for excluding the wet. This may be done by the provision of an overhang to the roof, by shutters, or by window casements and a sliding door.

The question of whether to provide permanent tables and seats may well be decided by

Fig. 71.— Summer house

the gardener. The objection is that when damp finds access to the house they are rendered unfit for use. On the whole it is preferable to use movable furniture. If, however, the gardener decides on fixed seats and tables, he should make the former of open pattern and paint them, so that they may be easily wiped dry and cleaned. A fixed table is generally a

nuisance, and more often than not is in the way. On the other hand, shelving, which may take the form of wide inside window-sills, is useful.

In the matter of design the plain rectangular pattern with double-pitched roof, shown in the first example, Fig. 69, has much to commend it, and is simple to construct. Other patterns may be made to suit special circumstances. I shall now describe a few examples of summer houses suitable for small gardens, giving rough outline specifications to enable the gardener to understand their details.

1. Rectangular summer house measuring eight feet by five feet, and six feet to eaves. Portable. Erected on loose bricks laid on gravel. Frame of three-inch deal quartering, mortised and pinned. Floor of one-inch floor-boarding laid on sills attached to uprights, with joints transversely of the length of the house. Sides of cleft oak fence pales secured with galvanized nails. Door and window-sills of oak. Window bars of one-inch square oak rod. Roof of sawn oak weather-boarding. Finials of oak. This and other houses may be lined with

match-boarding painted white, or stained and varnished. (See Fig. 69.)

2. Small square summer house measuring six feet by nine feet, and six feet to eaves. Portable. Framing, floors, sides, and roof as in last. Weathercock of sheet zinc gilded.

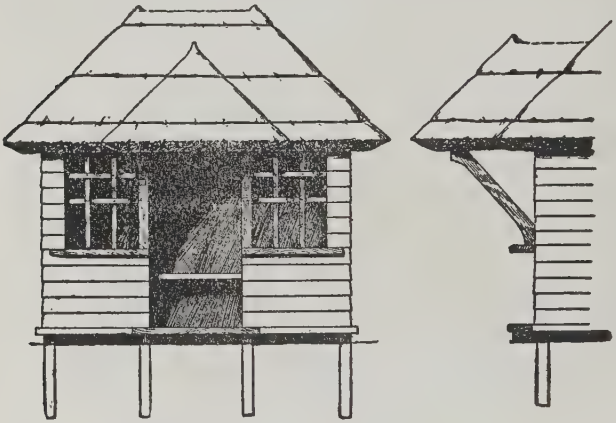


Fig. 72.— Summer house

The same type of house might be made of triangular shape, to fit an angle in the garden fence. The sides should then measure not less than seven feet to give sufficient room inside. (See Fig. 70.)

3. Rectangular summer house as lean-to, measuring ten feet by five feet, and six feet to

eaves. Back to be part of structure. All details as in previous examples. (See Fig. 71.)

4. Rectangular summer house measuring ten feet by six feet, and six feet to eaves. Attached to ground by sinking uprights. Uprights of four-inch square oak. Rest of fram-

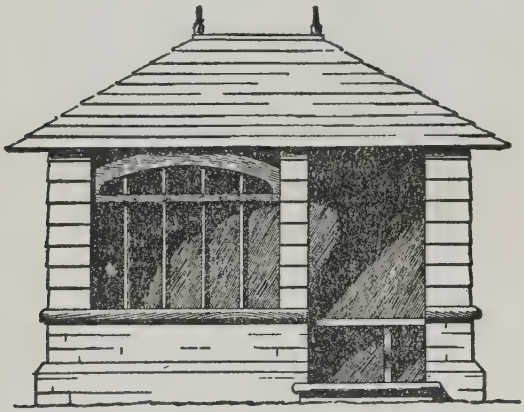


Fig. 73.— Summer house

ing of three-inch deal quartering. Floor of one-inch boarding. Porch brackets of oak. Window grids of interlaced oak laths, pegged at the crossings. Window and door sills of oak. Sides of cleft oak fence pales. Roof of match-boarding thatched. (See Fig. 72.)

5. Rectangular summer house measuring ten

feet by seven feet, and six feet to eaves. Base of nine-inch brickwork on concrete foundation. Floor of concrete rendered in cement. Door sill of stone. Superstructure of four-inch deal quartering, strongly framed, and uprights let into oak sill, covered with sawn oak weather-boarding. Window grid of one-inch oak diamond square rods. Arched stretcher of oak. Roof of red porous tiles. (See Fig. 73.)

6. Open summer house, octagon in plan. Uprights of oak stems about nine-inch diameter. Back and part sides filled in with oak weather-boarding on deal framing. Plinth boards of oak. Floor gravel. Roof framed of deal, match-boarded and thatched. (See Fig. 74.)

7. Mushroom open shelter. Centre column a barked oak bole with stumps of branches left as struts. Roof framed of deal, match-boarded inside, and on outside covered with oak shingles. Seats supported by legs of barked oak. Unbarked larch may be used instead of oak, to reduce cost. The roof struts would have to be separate, as the larch tree does not branch suitably. (See Fig. 75.)

8. Circular summer house. Uprights of unbarked red cedar. Walls of same, halved, with

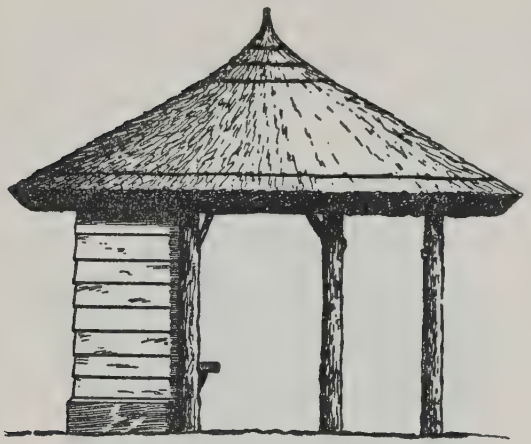


Fig. 74.— Summer-house

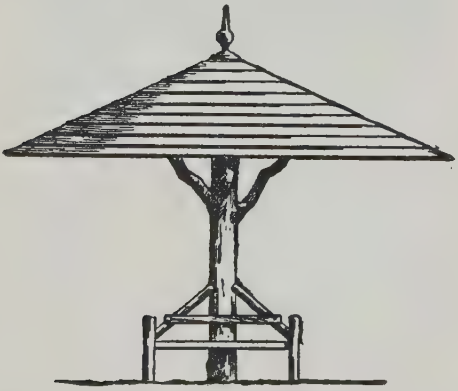


Fig. 75. — Summer house

bark outside. Roof thatched, over boarded deal rafters. (See Fig. 76.)

The above examples are typical of good

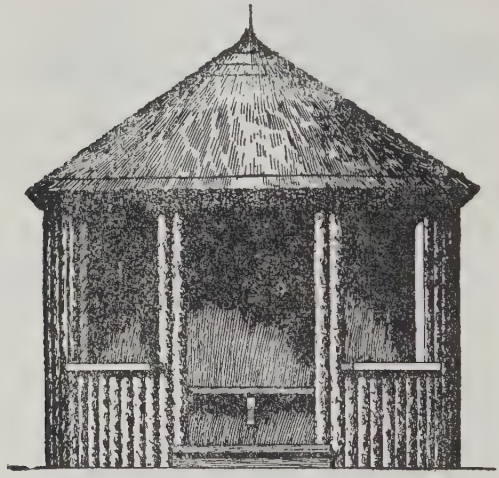


Fig. 76.— Summer house

practice and restraint in design, and will prove sufficiently suggestive to the gardener.

Arbours — This term may be understood to describe such structures as are designed to give shade by means of the foliage they support. They are in no sense weather-proof, being merely skeleton structures of light woodwork. They may be built of larch nailed together, or of light, sawn oak quartering joined by galvanized

screws. Ready-made iron wirework arbours are rarely in good taste, and are bad supports

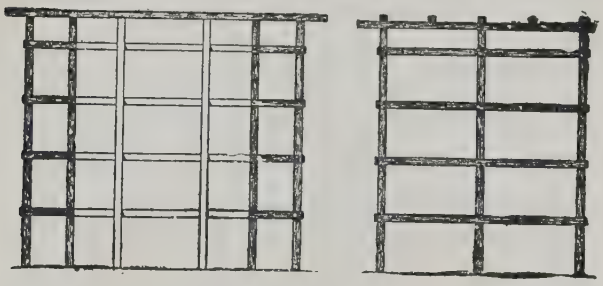


Fig. 77.— Arbour

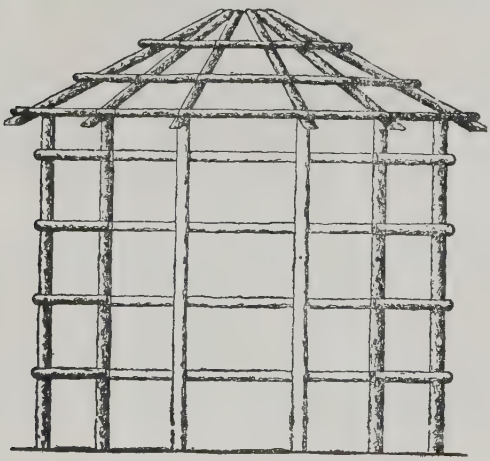


Fig. 78.— Arbour

on which to train living plants. The simpler the design the better, but, seeing that all

parts are exposed to the weather, the materials and construction should be such as will ensure a fair amount of durability. Trellis, though often used as an element in the structure, is unsuitable, because it requires to be painted to make it durable, and paint is inconsistent with a good effect in an arbour, which of all garden structures is the one in which we may nearest approach the so-called "rustic" treatment.

The Pergola—This charming accessory comes to us from Italy. It is the best device for growing a collection of flowering climbers, and displaying their beauty, as well as for making use of their shade. We may regard the pergola as an extended arbour. Its proper place is spanning a straight walk.

In its simplest form it is a skeleton structure of timber. The uprights may be placed from four to six feet apart, and should be in pairs. Oak is the best material, but red cedar or locust may take its place if the cost of oak is prohibitive. The cross-pieces should be secured with stout spikes, and the series of arches thus made should then be tied together with longitudinal timbers, over which other and lighter

cross-pieces may be fixed, if desired, to give additional support to the foliage. No further elaboration is necessary or desirable. In Italian gardens the pergola is often of the flimsiest construction, being made of light woodwork joined by cordage, but I do not recommend that plan for an American garden.

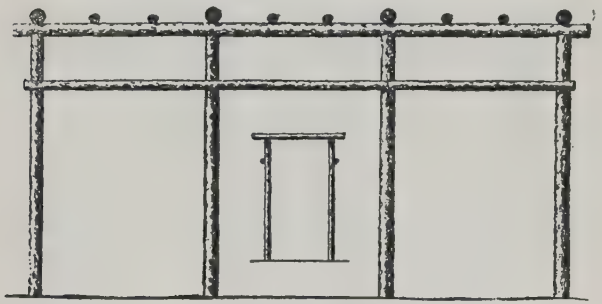


Fig. 79.— Pergola

Instead of timber in the state of nature, the pergola may be built of squared oak parts, left rough from the saw, adopting the design illustrated in Fig. 80, or something of similar character, always remembering to maintain a studied simplicity, combined with the necessary structural strength to withstand wind and weather, and the weight of the foliage which will eventually cluster about the structure.

The width between the uprights in a transverse direction must be sufficient to preserve a clear way of at least the width of the path, and little is gained by making it wider. The

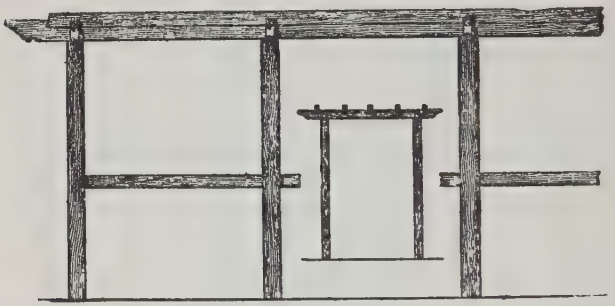


Fig. 80.— Pergola

overhang of the cross timbers is useful when it comes to training the plants, as the latter tend to grow full at the top. At the same time it pleases the eye.

When it is desired to give architectural significance to the pergola it is usual to make the pillars of stone or brickwork, and to tie them across with timber transoms, or to erect a framework or roofing of worked timber over the space. Such structures have no place in a small garden, as they would be out of scale comp red with it.

The aim of the gardener should be to get his pergola covered with attractive foliage and flowers, using roses freely, and other suitable climbers in abundant variety. At the same time he should give ample room for each plant to develop its full beauty.

The pergola walk should be flanked by borders, well filled with tall flowering plants, which will fill the spaces to right and left, and add to the charm of the vista by their colour and fragrance. *Lilium candidum* is a good subject for this purpose, as may be seen by

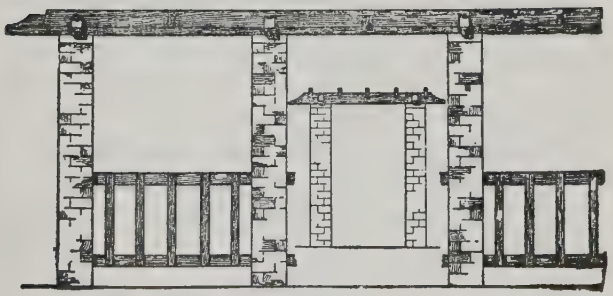


Fig. 81.— Pergola

consulting the beautiful illustration of a Venetian pergola in Mr. Robinson's book, "The English Flower Garden."

Some ready-made pergolas have been put

upon the market by manufacturers of garden accessories.

No pergola should be painted. Hence the need for avoiding a mode of construction which would lead to rapid decay under weather influence.

Arches — The arch is another device which enables us to realize height in the garden picture. At the same time it has a sphere of usefulness comparable to that of the pergola, but on a smaller scale. Its proper place is astride a path, and its avowed purpose is to support climbing flower growth. Isolated arches planted on turf or on a flower bed are illustrations of the right thing in the wrong place. Their principal function may be as well performed by a stout stake. The arch is best positioned when it marks the passage from one department of the garden to another. It may also serve a useful purpose as a partial screen, to withold the eye from what is beyond. It always looks best when it stands with both feet in a border. The galvanized iron wire arch should not be allowed to appear in a garden having pretensions to the picturesque. It is too flimsy for stability, and too artificial to make a fitting associate for the flowers.

A better type of thing is that now illustrated. It is a simple framing of light, rough sawn oak rods, within the capacity of any amateur to construct. The upright may be one and one half inches square in section, the cross-pieces one and one half inches by one inch, and the laths one inch by one half an inch. There is plenty of scope for tasteful design in varying the details of such an arch, without introducing further elaboration. Simple arches may also be made of unbarked larch on the lines indicated in the next illustration.

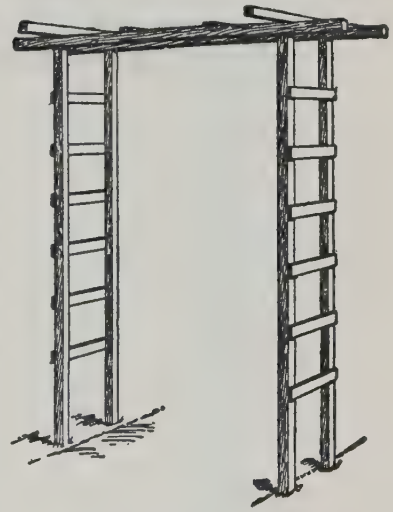


Fig. 82.— Arch

As in the pergola, so in the arch; a straight level top looks best, and best suits the purpose for which the arch exists. Arches with high-pitched roofs without cross-ties invariably

spread outward, as their design would promise to any one conversant with the elementary principles of constructive work. "Rustic" arches, compounded of curved branches, and

Fig. 83.— Arch

smeared with glossy varnish, are structurally weak and please only those whose eyes are not attuned to beauty of line and appropriateness of form. I raise no objection to a round-topped arch, since it actually reproduces its

prototype, but when made in wood, the only permissible plan is to form its curved part of *bent* wood, and to see that its curve is a semicircle, or at least part of a true circle or ellipse.

The Gothic shape is of all the most objectionable.

For temporary purposes, as, for instance, when it is desired to train a hedge plant into an arch, there is nothing better than an iron shape made from a stout rod bent to the proper curve. Ordinary trellis on arches implies the necessity for painting, which I do not favour in any garden structure if it can be avoided.

Oak trellis of the type I have already described, however, is not open to the same objection.

Trellis — I have already dealt with trellis in Chapter XVI, but I may be permitted to recur briefly to the subject here, more particularly in connection with its special aspect as a factor in the garden picture. The diagonal structure we associate with the word "trellis" is found all over the world wherever the garden is an established institution. Its function is to provide a light grill, which conceals and yet

discloses something of what is beyond. In modern garden design it may not always be introduced for that particular purpose, as I have shown when treating of reticence in the garden. More often than not it is used as a convenient support for climbing plants, with

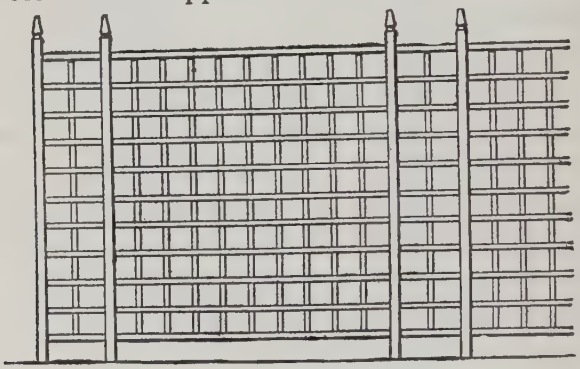


Fig. 84.—Trellis panelling

no care as to whether it becomes opaque with foliage.

The gardener will do well to bear in mind the effects obtainable with a trellis as a more or less transparent screen. With this purpose in view he may use a trellis of a more open mesh than the stock pattern, and he may make it himself by nailing laths to a strong wooden framework at intervals of twelve to fifteen

inches apart, preferably in horizontal and vertical lines.

When used in long lengths, trellis of this kind is less monotonous in effect than the usual diagonal pattern, particularly if it is subdivided into panels with some simple ornamental treatment of the division posts as shown in the illustration, (Fig. 84).

Seats — Taste in garden seats has suffered badly at the hands of the ironmonger, whose stock patterns one meets with everywhere. They have the merit of being inexpensive, and the glamour of their emerald-tinted ironwork and varnished wood impels the thoughtless gardener to purchase. But they have their drawbacks, if innocent as regards appearance. The rain finds its way in between wood and iron, and starts the process of rusting; sun and weather destroy the varnish; and then the wet attacks the wooden slats. Lastly, the iron heels have a way of working down into turf or gravel.

A better type of seat is one built entirely of wood, painted white or pale green.

The illustrations show some typical forms of wooden seat suitable for any size of garden.

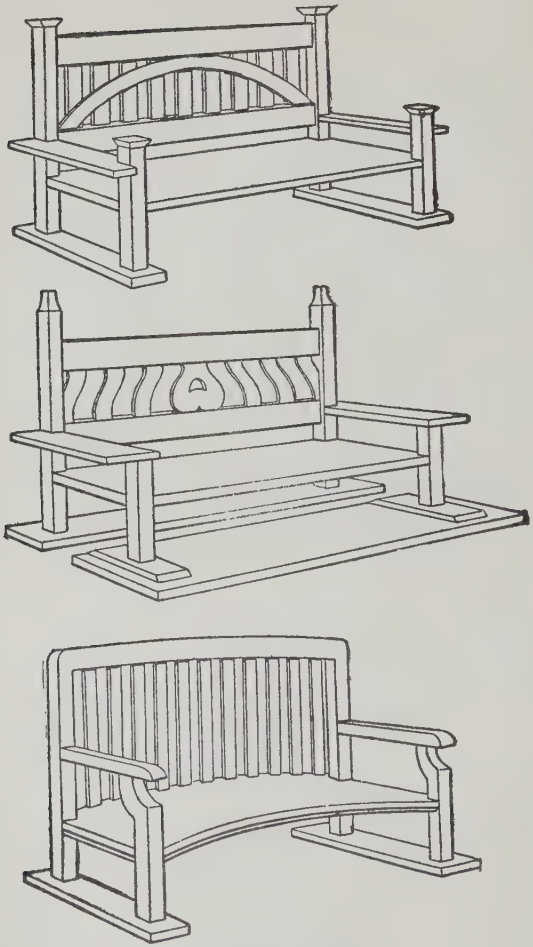


Fig. 85.— Garden seats

They are designed for comfortable sitting, with a low seat and high back, and ample stability. The battens attached to the legs distribute the weight sufficiently to prevent damage to grass or gravel.

From what I have already written on the subject, the reader will not be surprised if

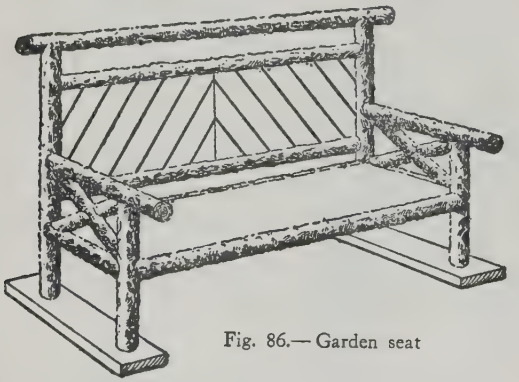


Fig. 86.— Garden seat

I condemn the "rustic" seat in its conventional form, in which a "crazy" design of twisted and bent branches strives to accommodate itself to a preconceived outline, but never succeeds. The result is a compromise which extracts penance from one's shoulder-blades, or prods the sitter in the region of his spine. Yet seats of simple rustic character could be

made at less than half the cost if manufacturers would only tackle the question.

If the gardener has a fancy for the unconventional, let him follow the suggestions in the accompanying illustration (Fig. 86).

But I must say that this type of seat is more suited for a woodland walk, or the wilder parts of the garden, than for a position within view of the house.

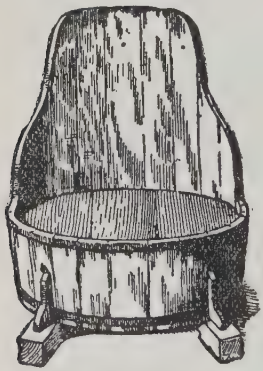


Fig. 87.— Garden seat

I have seen an ingenious adaptation of an ordinary oak barrel as a garden seat which is worth illustrating. (See Fig. 87.)

It is simple to make, and should be comfortable as a seat for one person, whilst its appearance is quite in keeping with the garden. Stone seats have the drawback that they retain moisture after rain, and therefore are not always in a condition for use. They may sometimes be introduced as part of an architectural scheme in a terrace wall, but in a small garden they are generally useless and out of place.

It is an excellent plan to provide brick platforms for wooden seats. (See Fig. 88.)

These should be raised above the ground surface some three or four inches. They ensure

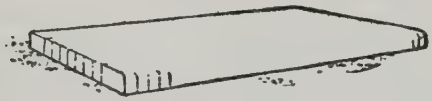


Fig. 88.— Brick platform for seat

that the woodwork of the seat shall not be subject to conditions leading to rapid decay. On brick or composite paths (see Chapter VII) the platform may be an expansion of the path.

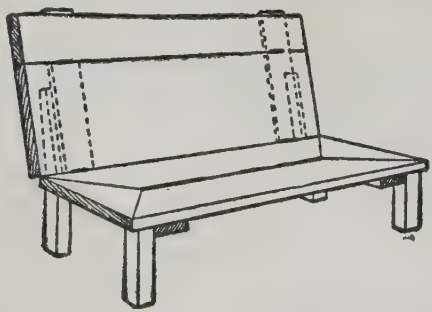


Fig. 89.— Folding seat

A seat may often be placed with advantage at the terminal of a path, and when in such position pains may be taken to give it char-

acter, as, for instance, by making it semicircular or otherwise unconventional.

A type of seat which has its usefulness in the less frequented parts of the garden is one made with a hinged back to fold down so as to cover and protect the seat in winter and during wet weather.

Bridges — When water is introduced into the garden it may be necessary to bridge it at some point, either as a matter of convenience or for the sake of good effect. There is not only a certain pictorial value in a well-designed bridge, but it affords a standpoint for viewing the water vista which the gardener could not otherwise secure.

The design cannot be too simple, and if any kind of decoration is attempted it should be restrained in character and appropriate for its purpose. I illustrate two such examples, the one made of oak, the other of rough cedar, the former of course being the more durable. Space should be allowed between the floor-boards to permit the rain-water to drain away.

When the banks are at a slight elevation only above the water level, the bridge may be a stout plank with rails, or its place may be

taken by stepping-stones, which always look well and are unconventional.

The Sundial — In these days of clocks and watches it cannot be claimed that the sundial

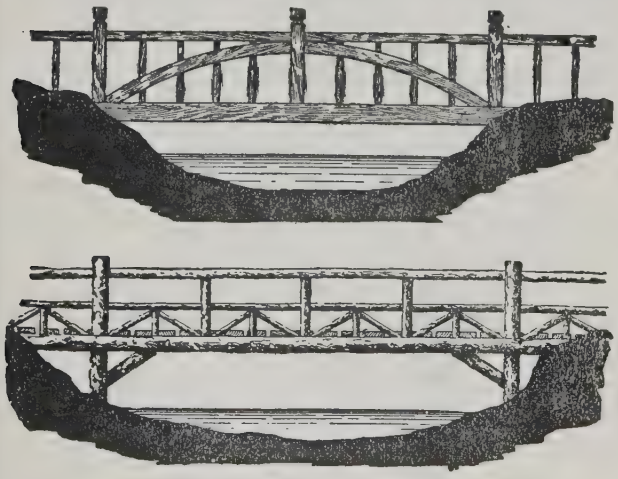


Fig. 90.— Bridges

serves any useful purpose as a time-keeper. Yet I know of no accessory which adds more charm to the garden picture. It is a link with a past age, when stately crowds, silk-coated and daintily gowned, roamed the garden pleasaunce, careless of the flight of time. An old writer says: "Sundials are pleasing and venerable garden decorations, and should be placed

in conspicuous, frequented parts, as in the intersection of principal walks, where the 'note which they give of time' may be readily recognized by the passenger." This advice holds good in present-day garden design, and requires no qualification. The old-world charm of the sundial is well expressed by Charles Lamb in his meditation on the Temple dial: "What an antique air had the now almost effaced sundials with their moral inscriptions, seeming coevals with that time which they

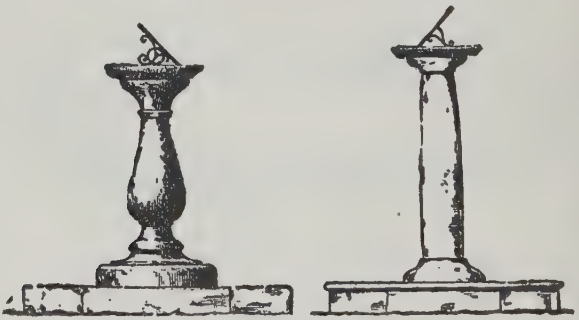


Fig. 91.— Stone sundials

measured, and to take their revelation of its flight immediately from heaven. How would the dark line steal imperceptibly on, watched by the eye of childhood, eager to detect its

movement, never catched, nice as an evanescent cloud, or the first arrests of sleep!"

Another author has described it as a "Simple, altar-like structure — the garden god of Christian gardens."

The lore of the sundial is voluminous and crowded with interest, but we need not follow it further. Enough if it provides us with a charming accessory full of old associations.

For all good and artistic designs we have to go back to the ancient patterns, of which an ample number of examples still survive. Perhaps the best of them are to be found in Scotland, bearing dates of some two hundred years ago.

Even in the smallest garden the sundial is not out of place if due consideration is given to scale.

The pillar may be of stone, brick or wood; but stone certainly has the best appearance, and follows tradition. It is sometimes possible to pick up an old dial shaft second-hand, but dealers in such things, as a rule, ask prices comparable with what a new shaft would cost if made by the mason. Still, if an old shaft can be found, mellow with age and weather

action, it is worth buying at a fair price. One may sometimes find, in the yard of a country builder, an old baluster, which may be purchased for a very few dollars and will serve its purpose as a sundial shaft admirably.

If a new stone shaft is to be made, then sketch some good old pattern. Make a careful full-

Fig. 92.— Brick Sundial

size drawing, and get the local mason to hew it out of any granitic rock, but do not permit him to add any embellishments of his own.

The illustrations in Fig. 91 will serve as a guide to the proper thing.

Though few old dials with brick shafts exist, I see no reason why this material should not serve the dial-maker. If the shaft is built of soft, red "cutting" bricks, as a rectangular block, it may be carved into some simple form as suggested in the illustration on page 268.

The top should be of stone, to offer a good bed for the dial-plate, and it should be set dead level.

In making a wooden dial shaft it is best to adopt a design of open character, more suited to the nature of the material.

The sundial should be accessible, not placed, as I have seen it, in the centre of a flower bed. It does not do to ignore entirely its purpose as a timepiece. At the centre of a group of formal beds it always looks well. It may also stand on grass, but in that event it should be provided with a wide base, or it will lose much of its architectural value.

Most old dials are inscribed with a motto — a pretty conceit well worth imitating in the modern reproduction.

Other Garden Ornaments — The fountain is

hardly a legitimate accessory for a small garden, unless it is quite an unobtrusive affair. Its most useful application is as an adjunct to a

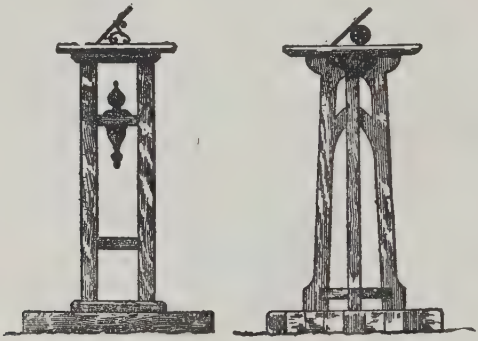


Fig. 93.— Wooden sundials

small pond where goldfish are kept. It helps aerate the water and therefore to keep the fish supplied with the oxygen which they need for respiration.

Without a constant water supply a fountain is not worth having. The only condition which would tempt me to install a fountain on a small scale would be the presence in my garden on high ground of a spring or stream of running water which could be tapped to supply it. It would then only be necessary to connect

the water supply with the fountain pillar by means of an underground length of iron gas piping, and the thing would be done.

Statuary is another accessory that should be kept out of a small garden.

Vases of terra-cotta, iron, and other material, if of good design, may be made to help the garden picture. I illustrate three examples which are quite unobjectionable in shape. (See Fig. 94.) Iron vases require to be painted at frequent intervals, and are best

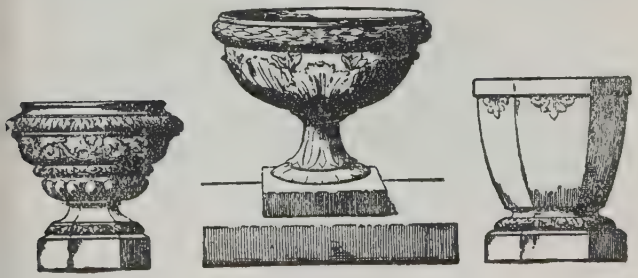


Fig. 94.—Vases

painted stone colour. All vases require some kind of base-work to show them off to advantage, such as a terrace wall or masonry pedestal. They are best placed near the house, being actually architectural features.

In old garden practice vases were sometimes

made of lead. Some good examples may be seen at Hampton Court, England. In no case should lead vases be painted.

In modern practice, vases of square pattern and ample size are sometimes used for

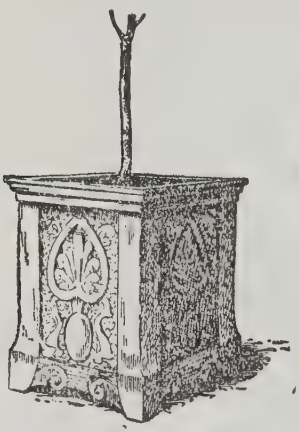


Fig. 95.—A terra-cotta vase

Fig. 96.—A wooden box vase

standard evergreen trees. I illustrate one design in Fig. 95.

Boxes or tubs may be made to serve the same purpose as vases, generally with equally good effect. They are certainly less pretentious, and will bear repetition with less chance of overdoing it. (See Fig. 96.)

If of oak they will not require painting, and

will last for a generation if properly drained. This can be done by putting several one-inch holes in the bottom. It is well also to support the box by introducing three or four loose bricks beneath it. This not only gives better facility for drainage, but permits ventilation.

CHAPTER XIX

Some Minor Accessories

The gardener should ever remember that good taste is exemplified as much in small things as in large. Little eyesores in the garden, often permitted from sheer want of thought, will go a long way to undo the good effect of thought and care and artistic treatment of the more important elements of the garden picture. I have seen an otherwise well-designed fore-court spoilt by the introduction of huge blocks of alabaster in the form of a "rockery," as if the possession of a ton or two of such material was a thing to be proud of, and to be emphasized at all costs. The practice of making a rock-work the depository of mineral specimens, gigantic fossils, nuggets of glass, and conchological curiosities is opposed to consistency and common sense. Yet it is by no means unusual. It is not alone in the use of these superfluous things that

the gardener sins. He may err in connection with the indispensable accessories. Flower stakes are a necessity, yet there is no reason why he should paint them red or yellow. They should exist as far as possible without being seen. For stout stakes, suitable for rose standards and dahlias, there is nothing better than one-inch square, rough-sawn oak rods, unpainted. They weather to a pale gray and sink into unobtrusiveness. Their durability alone should commend them to the gardener. If soft wood is used it may be painted with one of the tar solutions I recommended for fences in Chapter XVI.

Bamboo stakes, which owe their popularity to their low cost, have a very short life, and bleach to a ghastly white, thus becoming unpleasantly conspicuous.

Reverting to rose stakes, my own practice is to paint four inches in length on one side at the top lead colour, and on it to write the name of the rose in black enamel paint. This saves the need for labelling. For very stout stakes, such as one requires for pillar roses, a thin cedar post is perhaps the best. The white wood and green painted stakes on sale

at the seedsman's never harmonize with the foliage.

Labels are often too much in evidence, particularly in the early part of the year. The white-painted variety has the virtue of being legible for a time, but it is gone in a season.

Labelling is a practice too often carried to extremes. The gardener who knows his flowers will use as few labels as possible, and then only for such plants as bulbs and tubers, the positions of which are apt to be forgotten until their foliage pushes up out of the ground. Much labelling may be saved by jotting down on a rough plan of the garden the positions of any special plants of which it may be desirable to keep a record.

When the label is indispensable, it should be made of durable material and its appearance should be modest. I know nothing better than the label which is cut from sheet lead with scissors, and the name stamped on with a set of steel letter punches. An alternative plan would be to scratch the name with a steel point, say the tang of a file.

Labels of this kind, if cut with a tail, may be secured to trees by bending the tail round a

branch. These labels have the advantage that the lead gives with the growth of the branch, and therefore does no injury to the tree. Zinc labels may be cut from the sheet with shears, and the name etched upon them by first coating them with paraffin or wax, scratching the lettering with a steel point, and then applying dilute sulphuric acid with a strip of wood until the letters are etched deeply enough. Copious effervescence will show that the acid is biting into the zinc.

If the lettering on lead or zinc labels is smeared with red enamel and the surface wiped clean with a rag, the name will be more clearly visible.

I have already more than once protested against the use of paint in the garden. I admit the temptation to revive the freshness of things with a touch of colour in town gardens. But the remedy is worse than the disease, if the garden man is let loose with an unrestricted palette.

Stonework, terra-cotta, porous pottery (into which category comes the flower pot), and most woodwork, is best left unpainted. Iron-work, of which the less there is in the

garden the better, must be painted, or it will rust. But there is no reason why the paint should not be quiet in colour and in harmony with the natural objects of the garden. The man who paints his vases claret colour picked out with blue and white deserves anything. I have already offered suggestions for the colour of fences and trellis. I was long puzzled about the original colour of the paint work one finds on old garden furniture, which after years of exposure has acquired that beautiful turquoise shade beloved of painters, until I made some experiments. The result was to satisfy me that this charming tint is a product of weather action upon a somewhat crude green. If the gardener likes to test the matter, and is content to put up with the crudeness of the colour for a year or two, he may paint his garden woodwork with "Brunswick green." I can promise him that if he have patience and live long enough, in time the weather will change it to the desired tint. This change, however, only occurs in a pure atmosphere.

I need hardly warn the reader who has followed me thus far of the enormity of his

offence if he permits the erection of what I may call garden toys. I refer to such things as mechanical moving models actuated by the wind. Even the common white flagstaff, beloved of certain semi-nautical gardeners with a patriotic turn, is an eyesore I would banish from the private garden.

On the other hand, a well-designed dove-cote gives an old-world touch to a pretty garden, if positioned with an eye to its surroundings, and with a full understanding as to its value in the vertical picture.

CHAPTER XX

Garden Plans

In the following examples of small suburban back gardens, mostly consisting of plans actually executed, I have applied the principles set forth in the foregoing pages. Each plan is drawn to scale, and accompanied by a scale of feet, and for clearness I have included only such details as are needed to indicate the general scheme of the garden. These examples may be closely followed whenever the conditions are the same as shown in the plans. It should be understood that for a given set of factors there are many possible arrangements, all equally good, so that personal taste and inclination may be allowed considerable scope, so long as the main principles of planning are observed. Considerations of economy may dictate the omission or modification of certain details, which the gardener will decide for himself. My primary

object in presenting these plans is to elucidate the subject of garden design in a concrete form. If they should prove of use in individual cases, so much the better. It should be noted that each plan is made for a special aspect, and that it will only hold good for an aspect not greatly differing from that shown by the arrow with which the plan is marked. But, given the same aspect, the plan would serve for plots of similar proportions and dimensions, and with care to preserve due scale between details, for plots of larger or smaller size. Thus the plan (Fig. 106) might be applied to a plot of twice the length shown, by lengthening the central grass space and its associated borders, and leaving the features at such end the same as shown on the plan.

In all these examples the following points have been observed:

1. Grass is confined to compact areas, with means of access to them at more than one point.

2. Trees are placed so as not to cast shadows on the borders.

3. Principal borders are in full sun.

4. The summer house entrance is in shade or partial shade.

5. Symmetry in the main features of the plan is ignored.

6. Path space is reduced to a minimum, so far as is consistent with achieving a picturesque effect.

7. When grass space is divided, the two areas are not of equal size.

8. The vista from the summer house is made as interesting as possible.

9. No curves or angles other than right angles are introduced into the garden lines, except only where they may serve some useful purpose, as in Figs. 112, 129.

I have adopted the following conventional indications in all the plans:

Beds and borders	Full black
Grass	Shaded
House	Hatched
Paths, drives, and vegetable spaces	Unshaded

Arches, thus

Pergolas, thus

Glass, thus

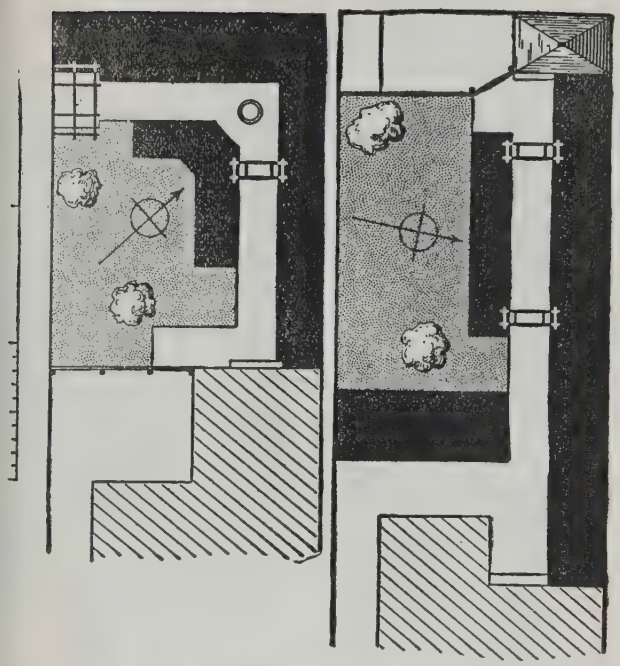


Fig. 97.—Size, 26 feet by 20 feet. Aspect, SE. The path at its near end communicates with the kitchen yard, and at its far end terminates at an arbour. The space at the angle of the path might carry a tub or sundial. The north-west boundary fence might be raised with trellis to give increased surface for growing climbing plants.

Fig. 98.—Size, 42 feet by 20 feet. Aspect, nearly due E. The path terminates at a summer house and gives access to a small yard, in which a tool-shed is shown.

Note: In this and succeeding plans, the upper caption pertains to the left-hand diagram; the lower caption to the right-hand diagram.

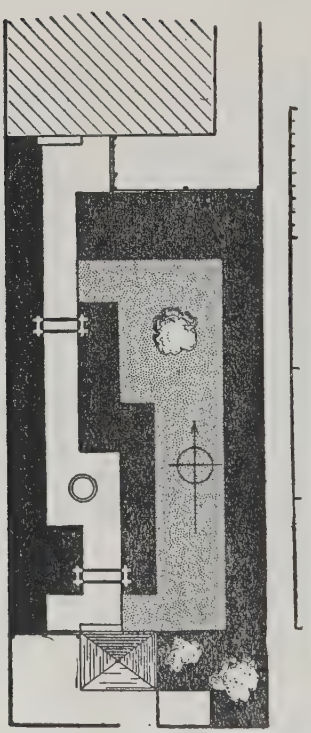


Fig. 99.—Size, 45 feet 6 inches by 20 feet. Aspect, N. The back entrance gate is screened by the summer house, and the yard offers accommodation for garden requisites, and contains a small tool-shed. The expansion in the path might carry a vase or tub.

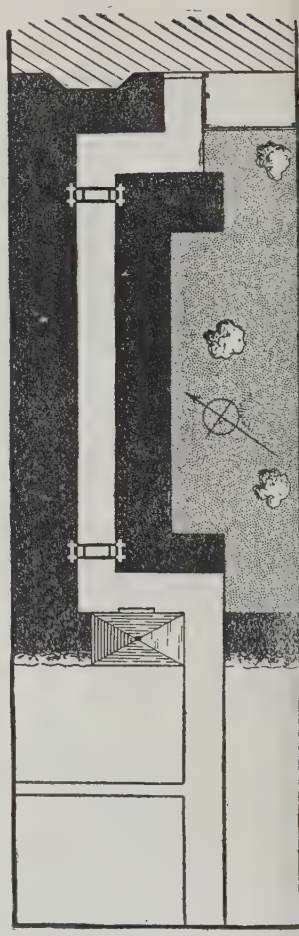


Fig. 100.— Size, 65 feet 6 inches by 22 feet. Aspect, approximately NE. About one third of the plot is devoted to vegetables and screened off by a hedge and a summer house.

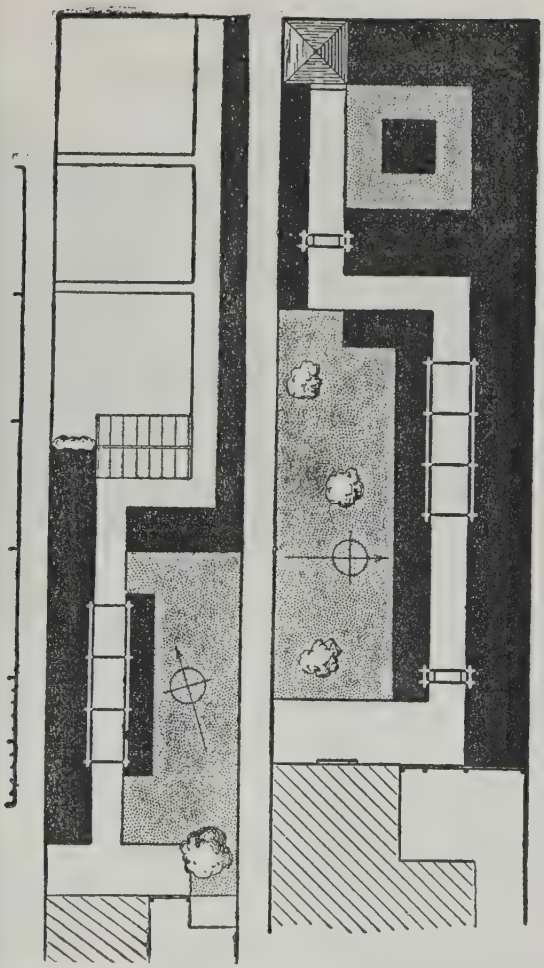


Fig. 101.—Size, 69 feet by 15 feet. Aspect, approximately S. Half the ace is given to vegetable ground, a glass house being placed at the division. he eastern border continues through the kitchen plot.

Fig. 102.—Size, 58 feet by 20 feet. Aspect, E. The whole of this plot is laid t as flower ground. The southern border against the fence is shady, and ould be planted with shade-loving subjects.

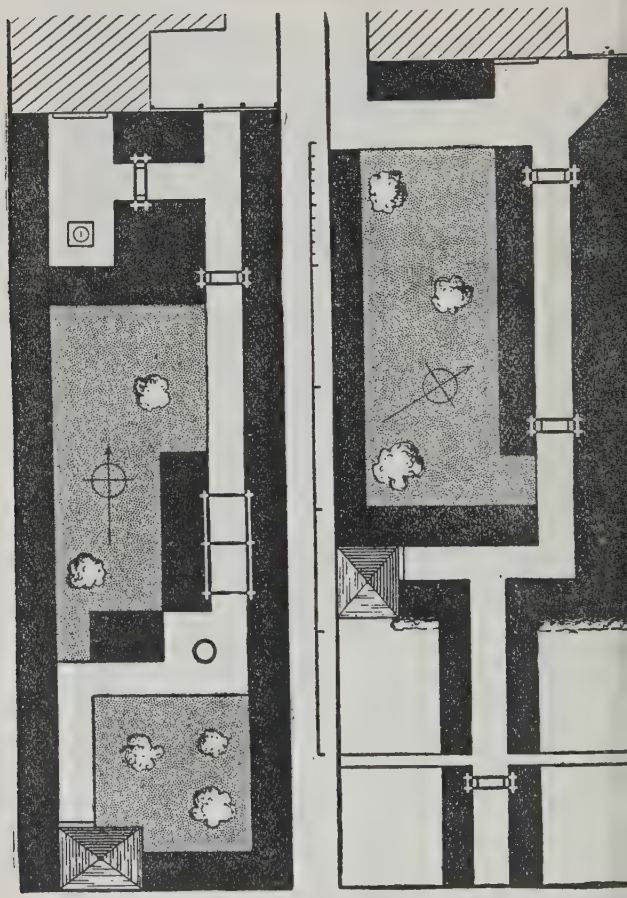
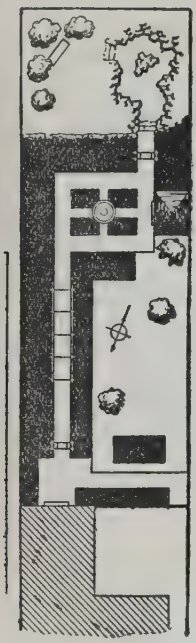


Fig. 103.—Size, 64 feet by 22 feet. Aspect, N. This aspect admits flower display close to the house-back. A sundial is shown in the gravel spa facing the back entrance, and a flower vase in the square expansion of t path. The small detached grass area might be planted with trees to make shady corner, and bulbs might be planted in the grass.

Fig. 104.—Size, 67 feet by 25 feet. Aspect, NW. About one third of t plot is screened off for use as vegetable ground, and borders are carri through it.



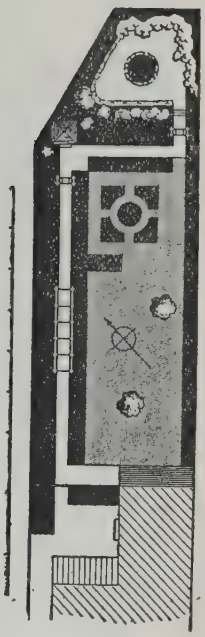


Fig. 105.—Size, 87 feet by 30 feet. Aspect, NNE. A feature is made of a formal group of beds facing the summer house, a sundial occupying the centre of the group. The path terminates in an alpine garden, which communicates by steps with a detached grass space, planted for shade. The dividing hedge gives a sense of enclosure to the formal garden, and privacy to the space beyond.

Fig. 106.—Size, 116 feet by 40 feet. Aspect, SW. The summer house, trees, and shrubs screen the diagonal piece of fence. The end space is devoted to a sunken alpine garden. A low rubble wall retains the borders to north and south-west. A raised circular bed occupies the centre. The roofed space at the house-back is a veranda, from which a pleasant vista down the plot is obtained.

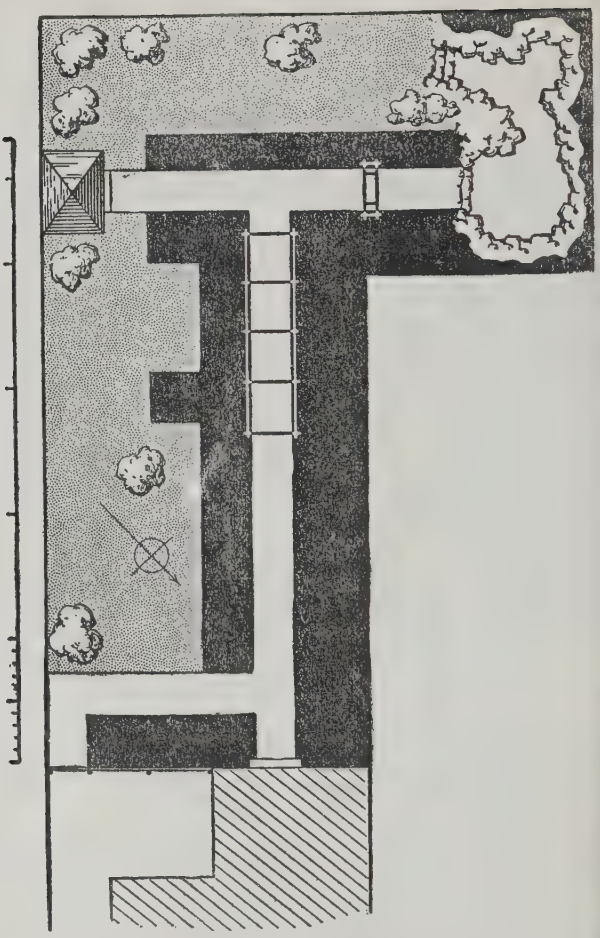


Fig. 107.—Size, 60 feet by 26 feet, expanding at end to 44 feet. Aspect, NE. This is not an uncommon shape for suburban plots, and it lends itself to a pleasing arrangement, the pocket at the end coming as a surprise.

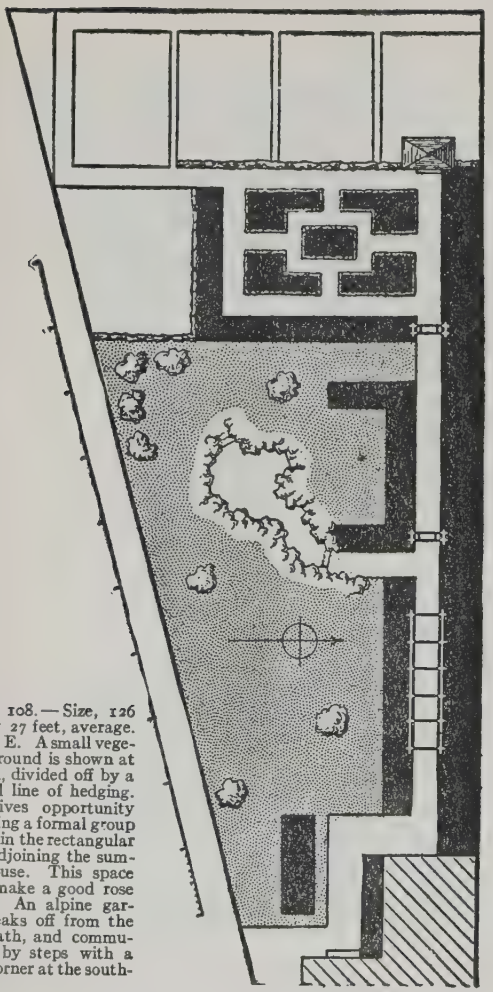


Fig. 108. — Size, 126 et by 27 feet, average. spect, E. A small vege- ble ground is shown at e end, divided off by a anked line of hedging. his gives opportunity r setting a formal group beds in the rectangular ace adjoining the sum- er house. This space ould make a good rose rden. An alpine gar- n breaks off from the ain path, and commu- cates by steps with a ady corner at the south- st.

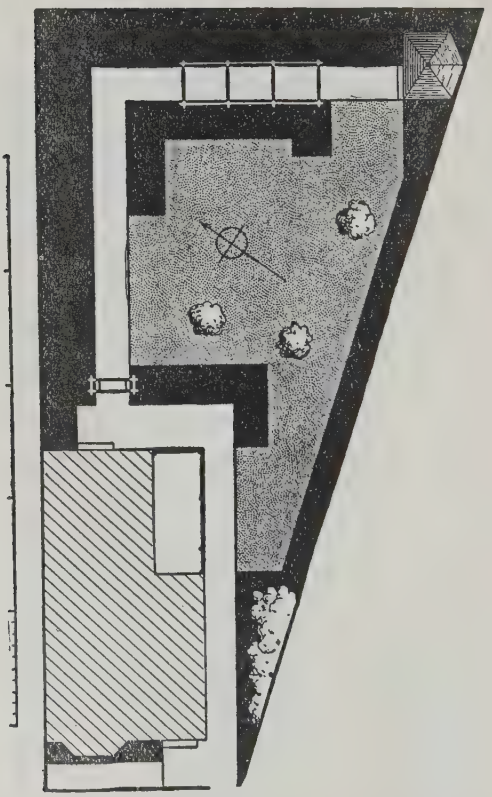


Fig. 109.—Size, 68 feet 6 inches by 29 feet, average. Aspect, SW. Th
details are sufficiently indicated in the plan.

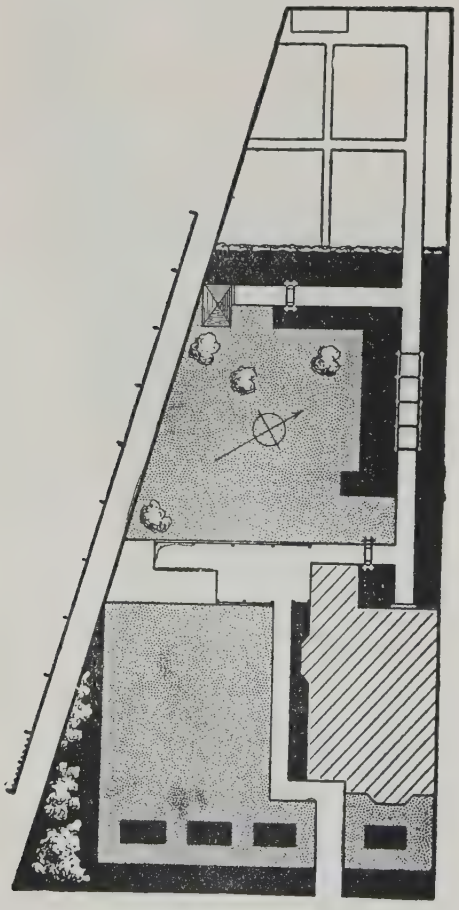


Fig. 110.—Size, 146 feet by 49 feet, average. Aspect, SE. A yard with outbuildings separates the flower garden into two almost equal spaces. The front grass area might be reserved for croquet. A small vegetable ground occupies the extreme end of the plot.

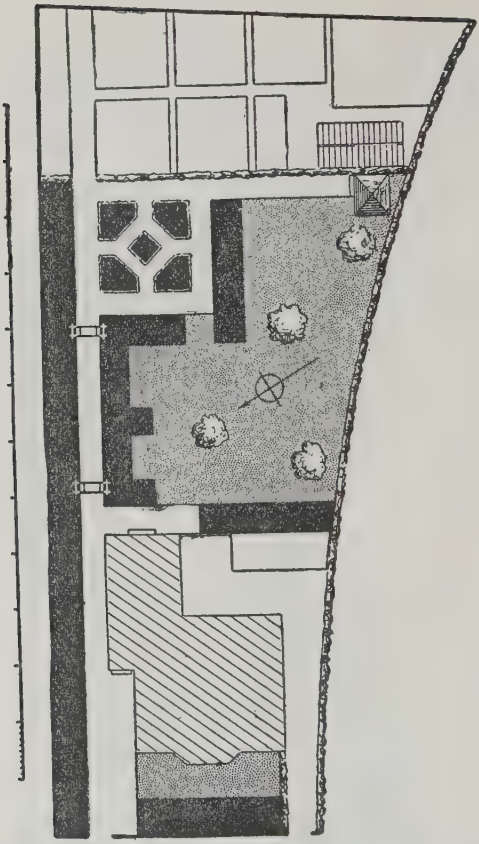


Fig. 111.—Size, 148 feet by 54 feet, average. Aspect, NW. A curve roadway, causes a diverging shape. The details of the plan will sufficientl explain themselves.

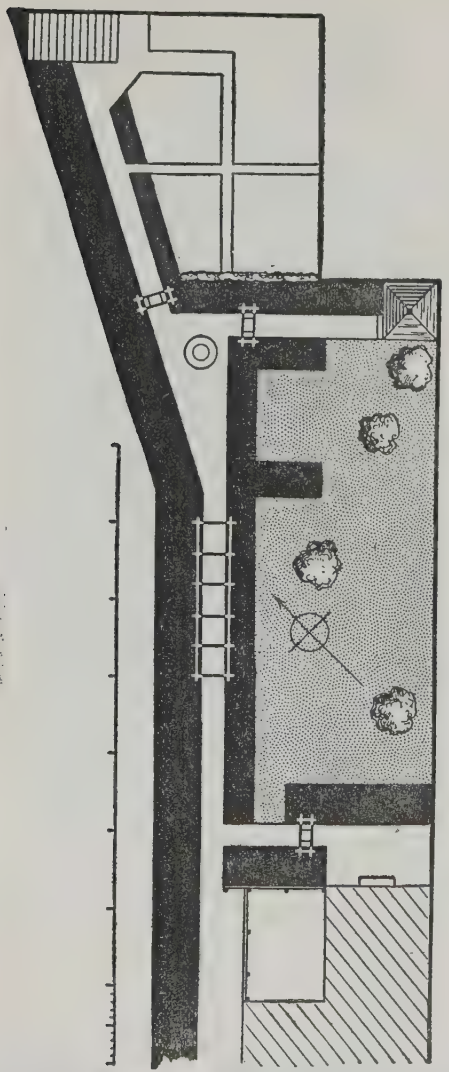


Fig. 112.—Size, 113 feet by 36 feet, average. Aspect, SW. In this case the garden boundaries are of unusual shape, but they do not preclude a good arrangement—in fact, this may be made a picturesque and interesting garden if the suggestion contained in the plan be carried out.

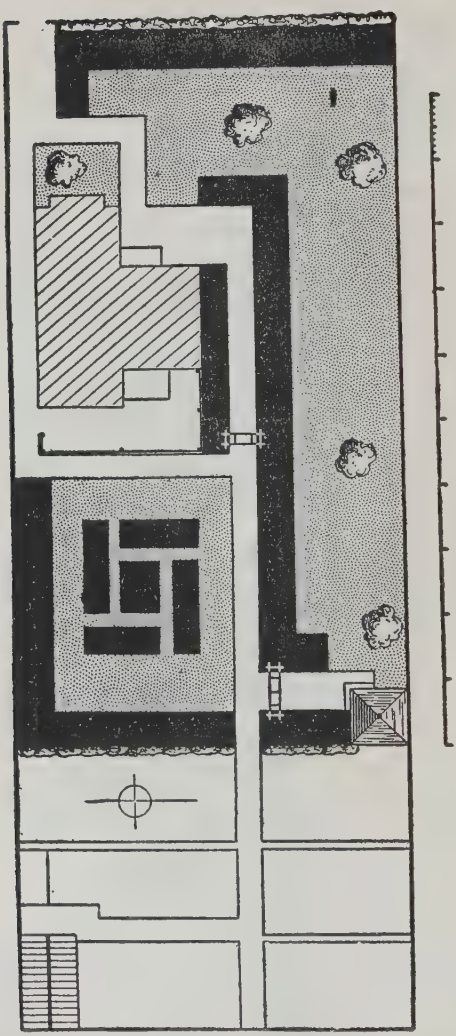


Fig. 113.—Size, 156 feet by 60 feet. Aspect, E. A simple rectangular plot with detached house, built on orchard ground. Fruit trees were retained in the positions shown, and made an interesting feature. In this and other examples it should be noted that a trellis screen is introduced to give privacy to the kitchen quarters

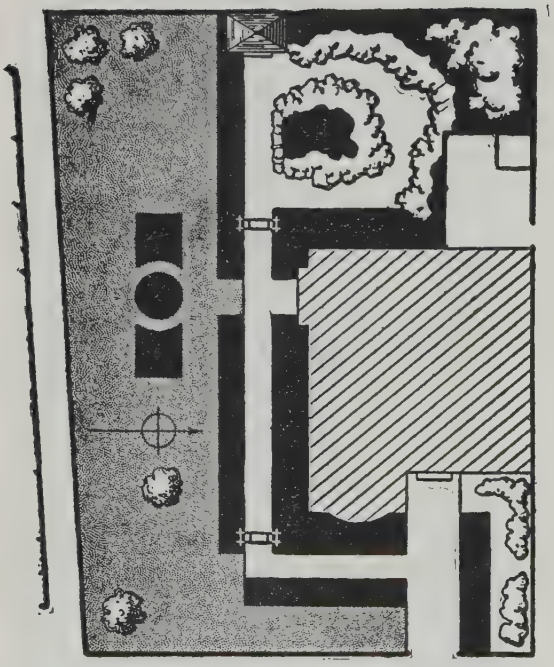


Fig. 114.—Size, 95 feet by 70 feet, average. Aspect, E. A slightly diverging plot devoted entirely to flower garden.

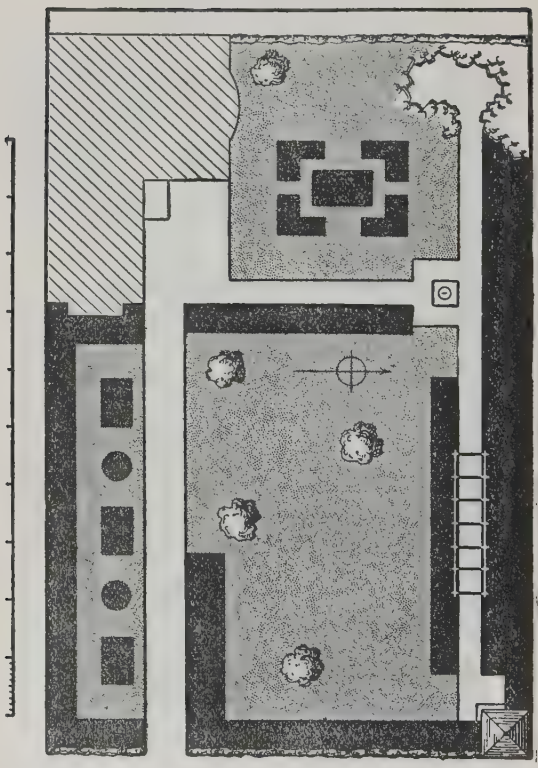


Fig. 115.—Size, 129 feet by 84 feet. Aspect, E. A corner plot with separate entrance to the kitchen quarters. In this case the house is placed as far as possible from both thoroughfares. The features include a summer house, a sundial, rock garden, pergola, and group of rose beds.

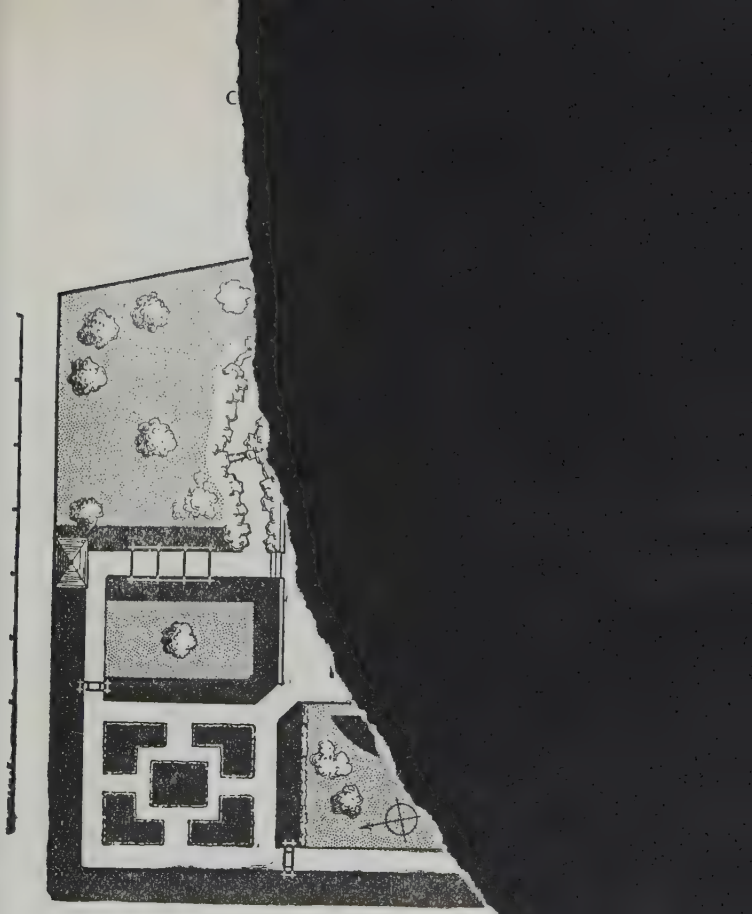
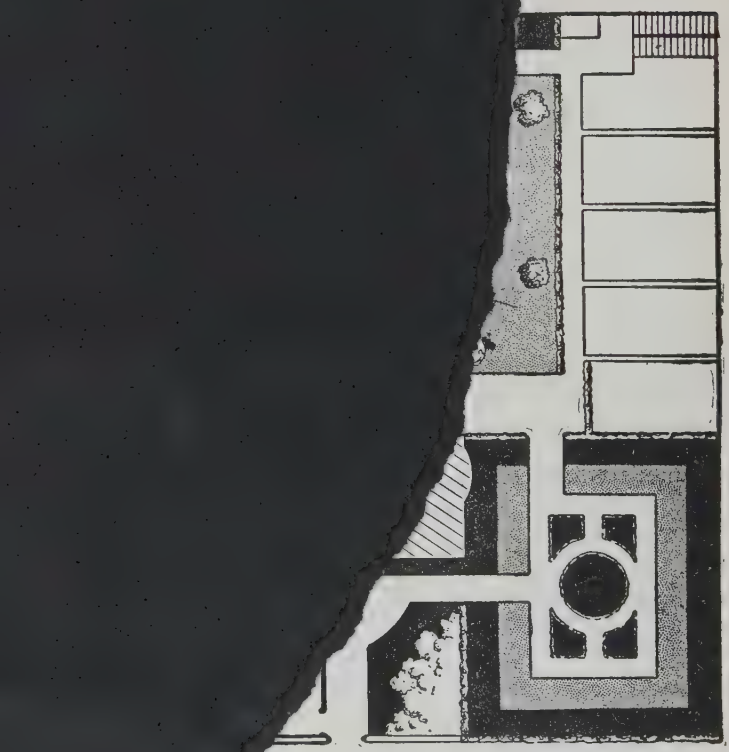


Fig. 116.—Size, 94 feet by 78 feet, average. Aspect, W. The
parallel with north and west fence lines. The slope to the north-
sitates terracing on two sides of the house. The terrace wall at its hig
is concealed by the rockwork of the alpine garden. Fruit trees are pla
the south-east corner. The whole makes a compact and interesting garo



Size, 116 feet by 87 feet. Aspect, nearly W. The enclosed
den south of the house is an interesting feature as seen from the
room window. The circular bed and borders on the principal grass
are intended for roses. A dial is placed in the expansion of the path to
st. A kitchen garden is included.

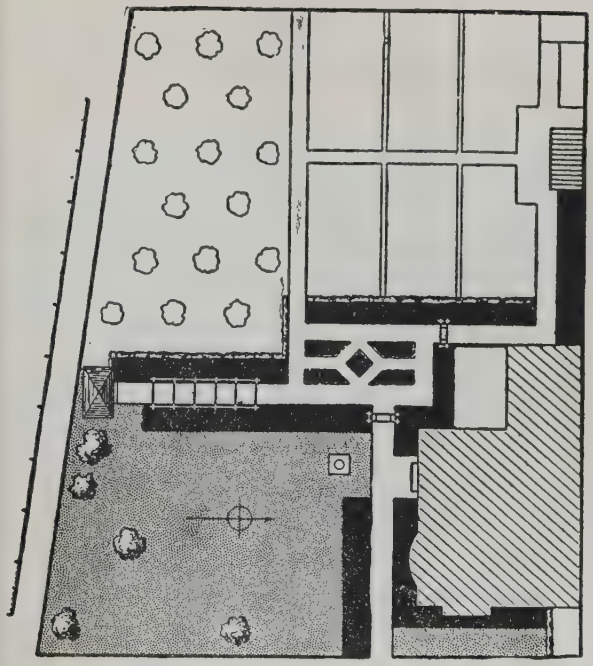


Fig. 118.—Size, 124 feet by 92 feet, average. Aspect, E. A slightly converging plot, one half laid out as flower ground, the remainder as fruit and vegetable garden.

Note: In none of the foregoing plans has any provision been made for a tennis lawn. In most cases the space is insufficient, without destroying the value of the garden as a picturesque flower ground. With plots of larger size the grass space might be utilized for tennis by keeping it free of trees.

Figs. 119 to 125 inclusive show examples of fore-courts or gardens situated between the house and the thoroughfare, in some cases being

supplementary to the principal garden, and in others constituting the principal garden space.

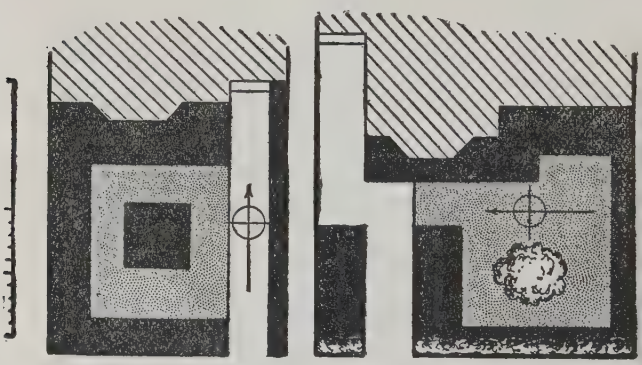


Fig. 119.—Size, 20 feet by 19 feet. Aspect, S. This plan shows the simple treatment I advocate for a small fore-court. It provides ample flower space and is more effective when well planted than if the design were more complex.

Fig. 120.—Size, 20 feet by 18 feet 6 inches. Aspect, W. A group of flowering shrubs occupies a central position on the grass. The position of the entrance gate permits of borders on either side of the path.

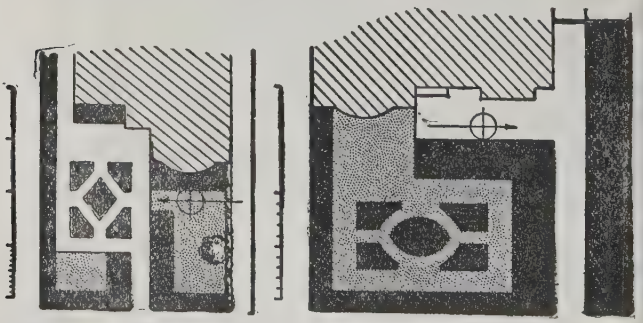


Fig. 121.—Size, 40 feet by 40 feet. Aspect, W. The group of beds on the gravel makes a pleasing and distinctive feature.

Fig. 122.—Size, 19 feet by 30 feet. Aspect, E. An arrangement which gives ample border space, and admits of a group of small beds on the grass.

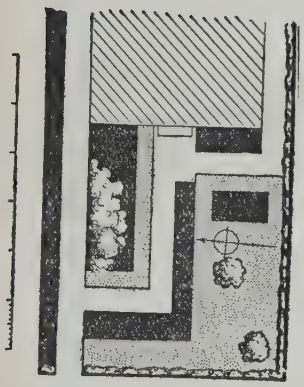


Fig. 123.— Size, 51 feet by 50 feet. Aspect, nearly W. A fore-court larger than the average, treated with no regard to symmetry.

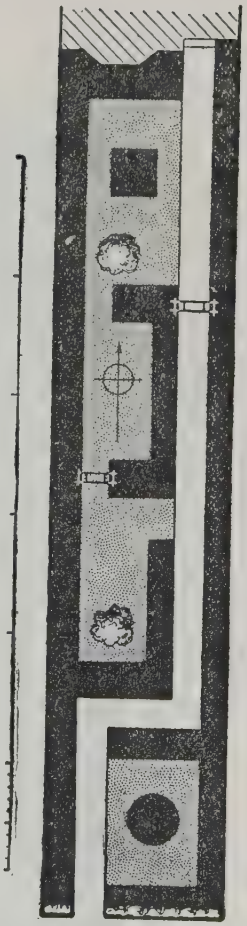


Fig. 124.—Size, 73 feet by 15 feet. Aspect, S. A not uncommon type of front garden, arranged so as to obtain variety in detail, and a screening effect for the sake of privacy.

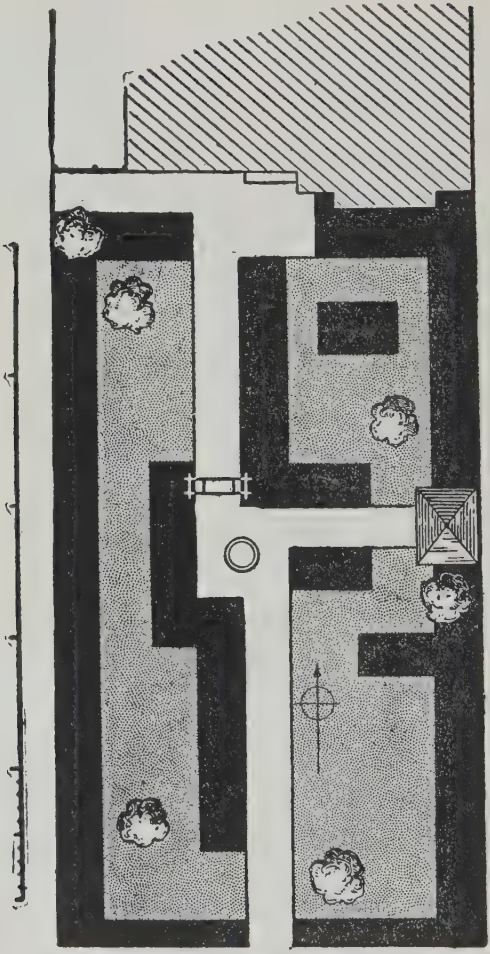


Fig. 125.—Size, 59 feet by 32 feet. Aspect, S. A front garden of ample width, admitting of treatment for picturesque effect. With a good screen of trees or shrubs along the front boundary this garden would not be unduly overlooked. It should be noted that the side yard is masked by trees and the summer house by transverse borders. A sundial might be placed in the central expansion of the path.

The following four examples of existing gardens, planned by the author, will give the reader some idea of how to treat spaces of larger area than those already illustrated.

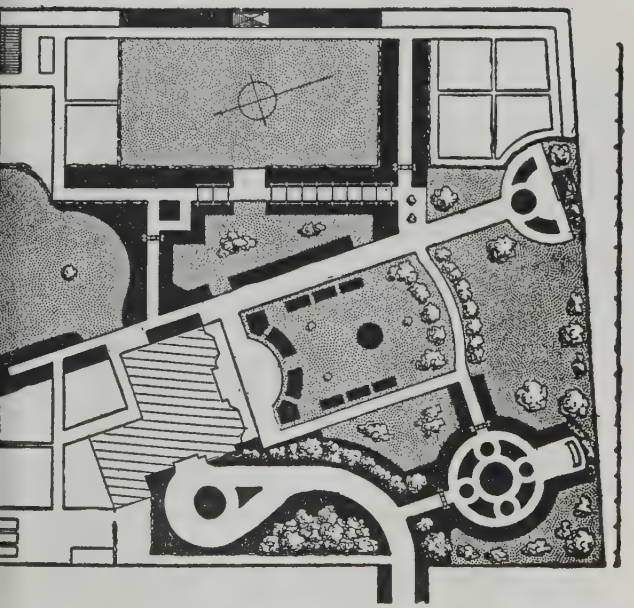


Fig. 126.—A plot of about one acre. The house had been built before the garden was designed, and made to face due south. Thus it was necessary to work in contradiction to one of the rules laid down in this book. Fortunately, the circumstances permitted of obtaining a good result. The diagonally running broad walk constitutes quite a valuable feature. The separation of the kitchen garden into three separate plots was by the owner's wish, and for the purpose of making the lawn on the north side, whence a pleasant outlook over an adjoining golf course was too-valuable to be sacrificed or marred by a foreground of vegetables. The formal group of beds in the south-west corner is a rose garden.

The planning has followed the general principles already expounded, though with a certain latitude permitted by the circumstances, and with concessions to the expressed wishes of the owners, in some of the details.

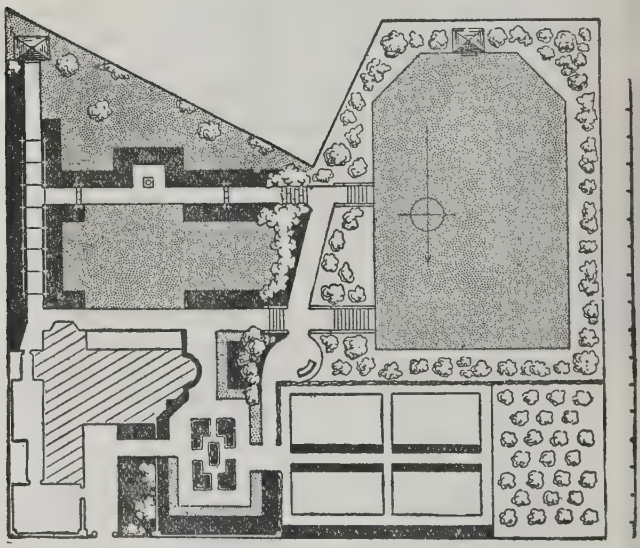


Fig. 127.—This was a plot of irregular shape, through which ran an old hedgerow with several standing elm trees, three or four of which were preserved. The line of this hedgerow followed the sloping path between the steps to the east of it. Note the vista through the kitchen garden, with its background of fruit trees.

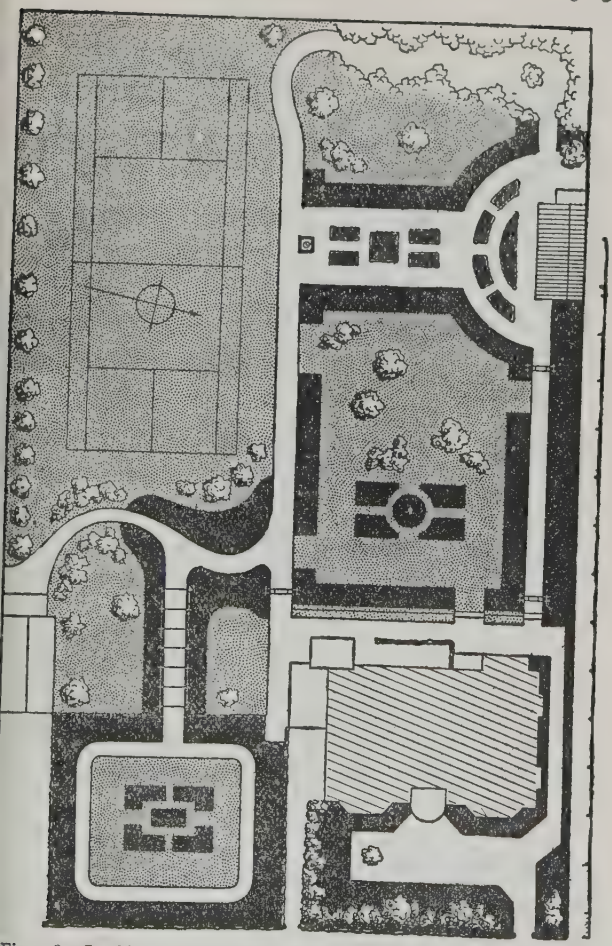


Fig. 128.—In this example certain details of the garden were determined fore the design was made, notably the enclosed space south of the house, nich is cut off from the fore-court by the tradesmen's passage.

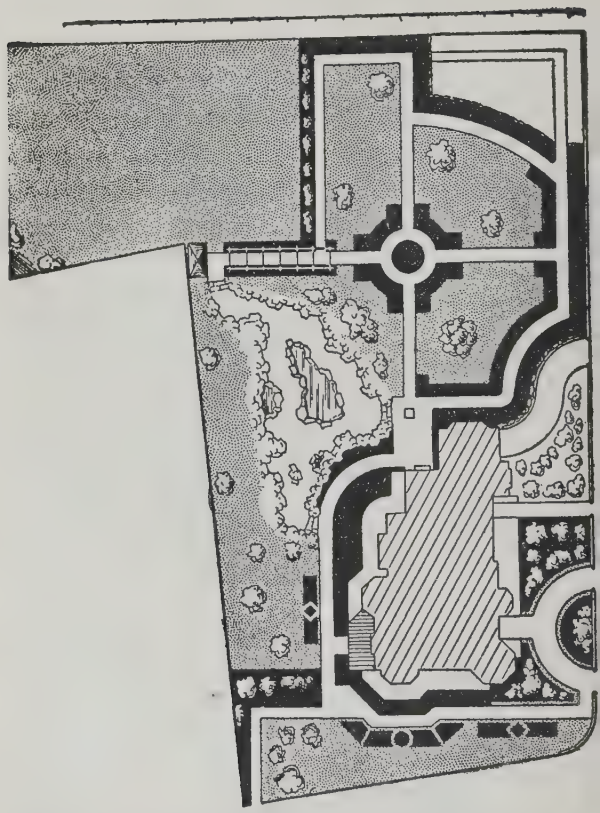


Fig. 129. A town site, in which the owner wished to make a feature of th alpine garden, to which considerable space has been given. On the oth hand, the space devoted to vegetables was to be small and out of sight. Th basement areas precluded borders along the house walls. It being a corn site, it was necessary to screen the garden from passers-by along the ea boundary. This was done by a substantial trellis in the position indicated o the plan.

CHAPTER XXI

Planting

The practical aspect of planting is for the working gardener. It consists of placing the plants in the soil in such a way that they at once find conditions suitable for growth, both as regards nourishment and external environment. This implies a knowledge of the requirements of each kind of plant. It is not sufficient to dig a hole and thrust in the roots. The hole should be of the right depth and of ample size to accommodate the roots when spread out over its bottom, and the soil thrown in should be carefully compacted around the roots by pressure. These details, however, do not enter into the question of garden design. Nevertheless the garden maker has a very real concern in the planting operations, because it is in the placing of the plants that his garden picture may achieve its highest development, or be utterly marred.

Flowers — In planting a bed or border it is necessary to consider the flowers in respect to —

1. Colour.
2. Habit.
3. Period of bloom.
4. Succession.

1. The most striking characteristic of the flower undoubtedly is colour, and the success of any piece of planting will depend to a large extent upon the skill and good taste with which the colours are managed. In the days when the old-fashioned flowers were deposed to make room for that unfortunate trio, scarlet geranium, yellow calceolaria, and blue lobelia, the canons of good taste were lost sight of in the new-born enthusiasm for vivid contrast in primary colours. The vogue for these flowers has now somewhat declined, but the trail of it still lingers in many gardens, and gardeners continue to plant as if the acme of good effect depended upon the accomplishment of a series of garish contrasts in the most brilliant gamut of colour at command. It is a question whether we should ever attempt to associate vividly contrasting colours, for if the mass of each colour is not

large, they will cancel each other at anything but short range.

The finest colour effects are to be sought rather in harmonies, which offer a much wider opportunity for broad, rich, and conspicuously telling display, both for close inspection and for distant effect.

The construction of harmonious colour schemes is not so much a matter of rule as of feeling, and a sense for colour is by no means universal. On the contrary, it is a somewhat rare gift, and it is not surprising, therefore, that a goodly proportion of gardeners make mistakes. Fortunately, however, most people who are not colour blind can recognize a good colour effect when they see it, though they may be powerless to originate one.

The treatment of a bed or border must to some extent be governed by circumstances, and by the number of different colours available. It is not desirable that every square foot of soil should cry aloud at the top of its voice. Here we may make a subtle harmony of subdued tints, the beauty of which will appeal only to the near spectator: there we may strive for a more insistent note of

colour, with a view to producing a vivid note in the general picture.

It is with the warm tints that one can contrive the greatest wealth of colour effect. Rose, crimson, scarlet, orange, and yellow associate harmoniously and reinforce each other. Lilac, lavender, mauve, purple, and violet form another group equally suitable for a rich concordance, or to contrast in the mass with yellow. Whites are generally best associated with the paler colours, such as pinks, mauve, or primrose yellow. The pure blues which we get in the gentian and delphinium are best kept away from the mauve and purple blooms. They are always difficult to deal with in a harmonized scheme, and perhaps had best be reserved for the few vivid contrasts with which we may punctuate here and there our colour picture. The rich scarlet which we have in the lychnis and Oriental poppy will furnish the other element of such a contrast.

A combination of gentian blue with a pale green foliage plant, like the common pyrethrum, is a somewhat daring but generally pleasing contrast. The reddish mauves also combine well with this coloured foliage.

It is hardly possible to enumerate all the combinations of colour, even when only two elements are used. Those who have an eye for a good colour effect will experiment for themselves, and continually find new and charming harmonies and contrasts. For those who cannot trust their colour sense I have compiled a short list of examples which may be relied upon to yield good results if used in a suitable environment.

Colours	*Hardy Flower Examples*
White and Mauve	White herbaceous phlox
	Mauve violas
White and Yellow	Iceland poppies of both colours
White and Pink	White violas
	Herbaceous phlox
White and Pale Blue	*Iberis sempervirens*
	Campanula Carpatica
Scarlet and Blue	*Lychnis Chalcedonica*
	Delphinium
Scarlet and Crimson	Geum
	Pyrethrum
Deep Blue and Pale Blue	Delphiniums of both shades
Crimson and Rose	Sweet-william
	Herbaceous phlox
Mauve and Yellow	*Galega officinalis*
	Anthemis tinctoria
	Aster
	Solidago
Crimson and Yellow	Snapdragons of both colours
Purple and Yellow	Crocus
	Daffodil

Gray foliage should be associated with vivid colours such as crimson, scarlet, and pure blue; brown or purple foliage with yellow and orange. Magenta crimsons and bluish pinks should not be placed in juxtaposition to pure crimsons or scarlets.

Rose-pink and rosy mauve harmonize with silvery gray, and we may have this combination in one plant as in *Stachys lanata*. As might be expected, nature rarely makes a mistake, so that a plant's own foliage is generally in harmony with its flowers, or furnishes a good background contrast for them.

How little the subject of colour is understood, even by those who offer guidance in the matter, is shown by the wide differences of view that writers have adopted. One authority, whose opinions one would imagine were the outcome of some defect of vision, says, "Nor have I any preference for one colour over another; but I have very decided notions that the various colours should be so completely commingled that one would be puzzled to determine what tint predominates in the entire arrangement." This surely is most precise advice on how *not* to achieve a good

colour scheme, and well describes the common but ineffective method of arranging a mixed bed or border, in which everything kills everything else.

It should be an axiom in garden practice to contrast or harmonize colour in *masses*. An instructive experiment tried some years since, for determining the best method of painting gun-carriages so as to render them inconspicuous at a distance, consisted in using red, blue, and yellow paint in spots, a kind of stippling of the surface with the primary colours in equal proportions. The result entirely realized its originator's intentions. The coloured spots were mutually destructive, and the resultant tint a neutral gray. This is quite in accordance with theory, and I mention it here because it demonstrates how entirely mistaken is the writer whose dictum I have just quoted.

Were I planting a bed with flowers of two contrasting colours I should adopt the simple plan of using a broad edging of one colour with a central mass of the other. A bed of white pinks, edged with mauve violas, or of purple blue Canterbury bells, edged with yellow violas, or

Fig. 130 — Arrangement of herbaceous border

with the yellowish-green foliage of the pyrethrum, would entirely satisfy my sense of a good colour effect.

When it comes to planting a long herbaceous border, the same principles apply. Indiscriminate mixture of colours, as already seen, is the least effective mode of planting, and formal parallel rows are almost equally ineffective. The best way is to use large masses of each colour, and with them to construct a consecutive harmony, which we may regard as a kind of floral spectrum in which colour succeeds colour, each harmoniously related to its neighbour on either side. These colour masses should not be in simple compartments divided by transverse lines, but of irregular shape, as shown in the illustration.

The sequence of colours may be varied within limits, always provided the rules of harmony be observed. Here are two typical series:

(1) Purple, mauve, white, pale yellow, bright yellow, orange, scarlet, crimson, rose, pink, white, pale blue, full blue.

(2) Deep red, scarlet, orange, yellow, pale yellow, white, pale blue, deep blue.

The same order may be repeated, adopting different proportions for the masses if the border is a long one, or the scheme may be varied by changing the sequence of colours. In some cases a more limited scheme may be advisable, in which one or more colours are suppressed, white being an element which may be omitted without detriment to a good result. White is so telling at any time that it should always be used with restraint. Yellow also is a colour that may be overdone.

The foliage of the plants which we use in these colour arrangements may or may not affect the results, either by reinforcing the colour values, or by toning them down. Generally speaking, however, it takes a subordinate place, and may well be neglected. Chevreuil, the famous Director of the Gobelins Dye Works, who wrote "The Laws of Contrast of Colour," says: "An objection might be addressed to me that the green of the leaves

which serves as a ground to the flowers destroys the effect of their contrast, but it is not so; and to be convinced of it, it is sufficient to fix upon a screen of green silk two kinds of flowers (of contrasting colour) and to look at them from a distance of about ten paces; for when the eye is fixed upon two well-defined objects simultaneously, surrounding objects produce but feeble impressions."

I believe that in the garden picture we hardly appreciate the colour effect of the foliage of our plants, not only because of the retiring character of most greens, but because they merge into the other larger masses of green — the grass, trees, and shrubs — and thus become part of the general background.

There are, however, the gray and yellow greens which, by reason of their contrast with the others, are not negligible, and on that account they may become useful as colour factors in certain schemes.

The student of colour in the garden may consult Chevreuil with advantage. He has analyzed colour sensation in a masterly way, devoting a special section of his book to horticulture, and though his conclusions were

formulated half a century ago, they still hold good in their scientific and artistic applications.

2. The habit of the plant is the next point to be considered, and it is by no means an unimportant one. By habit I mean not only shape, size, and general appearance, but also those special characters which distinguish one plant from another. It may consist in mode of branching, texture of foliage, form of flower head, colour of foliage, denseness or sparseness of blossom, or time of flowering in relation to leaf production (some plants, it is well known, put forth their flowers before their leaves, as the daphne, forsythia, etc.). It is only when we know these details that we are in a position to use the plant to best advantage. I have already pointed out how important it is that our garden plants should be allowed freedom of growth to develop their individual characters. Character in the plant is one of its greatest charms to those who regard it not merely as a means for producing blossom. In referring to "freedom of growth" I do not wish it to be understood that I condemn those necessary pruning operations which make for the welfare of the plant. I refer solely to the growing of

plants in a way to develop their special habit, instead of pinching and cutting them into some conventional form foreign to their nature.

To make the point clear I may instance a herbaceous border in which the best general effect is produced when there is no rigid system of grading the plants in height. Though the rule should be to put the taller and more robust plants to the back, it is essential to the best results from a picturesque point of view that this rule should be broken occasionally, by here and there reversing it. One or more bold clumps of flower brought to the front at irregular intervals gives a character to the border that would be unobtainable in any other way.

The gardener who prides himself on a tidy garden may resent the intrusion of a massy clump upon his path or grass edge, and will keep it within bounds by ill-judged mutilation, till the poor intruder becomes a maimed wreck. It is by this kind of gardening that plants are shorn of their beauty, and the border is made a stiff and formal detail.

The next point is to see that each plant has sufficient elbow-room to develop without

hindrance from its neighbours. This does not imply a starved bed or border, only that, armed with the knowledge of the habit of each plant, the gardener allots it just sufficient room to grow centrifugally without check from its companions. Thus the taller plants may be separated by others of more moderate growth, and the former will have space above to expand their foliage unhindered.

Again, with a knowledge of plant habit we may associate bushy plants with those which tend to legginess — to use a term well known to the gardening fraternity — and thereby conceal the uninteresting view of a sheaf of bare stalks. Plants which throw up long narrow spikes of flower may keep company with others having a tufted habit, to their mutual advantage in the general effect. Those with silvery, glaucous, or bronze foliage may be placed where they will reinforce others whose flowers are best set off by contrast with these special kinds of foliage. Shrubs and plants which flower in advance of their leaves may be supported by evergreen or early-leafing plants. Again, we may use the bold-foliaged plant for association with those

of sparse and inconspicuous habit. The final result of care in these particulars will be a natural, informal effect, in which every individual plant appears to be, and is, at home in its surroundings, and in consequence is best conditioned for producing its maximum contribution to the aggregate picture. If, as I have instanced, some vigorous plant pushes forward beyond the boundary, or some pretty trailer ignores the edging, it is a gain to the gardener and no fault of the planting. He should suffer such accidents, in reason. He may even conspire to bring them about, for the special purpose of importing informality into the garden.

In the back row, variety of height is desirable, even when all are tall, for the plants will silhouette against the background, and an even row, like soldiers on parade, would be monotonous.

In beds and groups of beds the same principles apply, but not quite in the same degree. We may group the tall plants in the centre and reserve the margin for others of smaller and more uniform size. Though we may plan on geometrical lines, we should, like the painter,

endeavour to soften them. Our plants will do that for us if only we allow them.

3. It is only by making ourselves acquainted with the flowering period of our plants that we can be sure that those we bring together for the purpose of constructing a contrast or colour harmony will be in bloom at the same time. Not only should they start approximately simultaneously, but their periods of bloom should, as far as possible, coincide in length, because the effect will be measured in duration by the period of the flower which lasts the shortest time. By judicious selection it is possible to contrive that there shall be few failures from this source.

4. Succession is the very keynote of good gardening, for we cannot afford to shorten the period during which flowers are possible, nor can we tolerate empty spaces in our borders. By consulting a seedsman's list the garden maker may select his plants and so dispose them that, as the spring-blooming kinds fail, others will succeed for the summer months to be followed in their turn by the autumn-blooming kinds. This system of succession, well arranged, will give us flowers from Febru-

ary to mid-November, thus covering the maximum period during which we are likely to be able to enjoy our gardens. It demands some nicety of method, particularly when the borders are laid out for a broad colour effect, implying that each separate colour group must contain plants of which some will always be in flower. In other words, the distribution of early, middle, and late-flowering plants must be over the whole space and in intimate association.

My references have been confined to hardy plants, because they alone come within the purview of the garden designer. The effects to be obtained from annuals and bedding-out plants belong to the routine of garden management, but the same principles apply as regards colour, habit, period, and succession.

CHAPTER XXII

Further Considerations in Garden Making

The impress of art should be as much in evidence in the minor details of the garden as in the more important and more obvious ones. Carelessness in small matters may go a long way to undo the results of thought and skill devoted to the main features.

In the foregoing pages I have endeavoured to formulate simple rules for the guidance of the garden designer. I have not only stated the "how" but also the "why," believing that thereby my advice will carry more weight and be the better understood and remembered.

Although the construction of a garden plan on paper is a necessary preliminary to the practical operations on the site, it will only carry the garden maker a certain way toward the desired result. Much of the detail will have to be filled in on the ground. It is in the

finishing touches that he may add distinction to the picture, and he should, therefore, study his work as it proceeds, looking for opportunities for minor embellishments and effects in detail. I do not mean that he should seek for an over-elaborated result, but he should be alive to possibilities, and should neglect none of the various openings which may present themselves for artistic work in a small way.

I have already dealt with colour in the planting of beds and borders, but there are other places in which the garden maker may introduce charming effects. One of the most gorgeous pieces of colour work I have ever seen was the result of planting Virginia creeper at the foot of a clump of small firs in the forecourt of a country residence. In a short time it had clambered up amongst the dark foliage, and had festooned it with graceful sprays. In summer the foliage told as light green against dark, but the effect in autumn, when every leaf was vivid carmine, was indescribably beautiful.

I remember also a similar effect in a Scottish garden, in which a flame nasturtium (*Tropæolum speciosum*) had taken possession of a large straggling elder tree, and wreathed it about

with masses of scarlet. The result in that case was a happy accident, but none the less worthy of being noted and subsequently repeated with deliberate intent. This nasturtium cannot be found in America, but the trumpet vine offers a near substitute.

Reds always come so well against a mass of dark foliage that we can never make a mistake in contriving effects like those just described.

There are colour effects of contrast and colour effects of harmony, and we may employ either or both according to circumstances.

An irregular belt of the beautiful palmate-leaved Japanese maples on the near side of a mass of shrubs makes a glorious expanse of quiet but sufficiently conspicuous colour, if the component plants be selected for variety of tint and texture.

The favourite box elder (*Acer negundo*), and its gold-leaved variety, if often repeated, produce a cheap and commonplace effect, but a single specimen, well placed, strikes a charming note of colour. A like effect is obtainable with the common golden elder, which should be cut to the ground every year to preserve its bushy habit.

The flowering trees afford us abundant opportunity for constructing colour masses in the vertical plane, but their colour must be seen against a solid background of green foliage to yield its best effects. This applies particularly to trees with loose, open foliage like the thorn, almond, and laburnum. Subjects like the horse chestnut are sufficiently dense in foliage to constitute their own background.

I have already referred to the planting of bulbs in grass. Some surpassingly beautiful effects may be contrived in the less formal parts of the garden by the judicious use of bulbs in this way. The daffodil, crocus, scilla, and snowflake are suitable for the purpose. They should be arranged in large groups of one colour, not commingled as is so often done.

In a half-shady corner, particularly where there are banks, the polyanthus or lily-of-the-valley, may be naturalized, and will prove a delightful feature in spring.

Though subtropical gardening is a costly and troublesome hobby, a semi-tropical effect may be secured on a small scale by selecting suitable plants. Given a position not too closely related with formal surroundings, it

is worth while to attempt such an effect, using only hardy plants. Success will depend upon the skill with which the materials are employed. I should prefer a sheltered position, and I should plant such trees as staghorn sumach, ilanthus, *Aralia spinosa*, and *Salisburia adiantifolia*. There should be a collection of hardy bamboos, yuccas, reeds (particularly *Arundo conspicua* and *A. donax*), pampas grass, and bold-foliaged plants like acanthus, polygonum, rhubarb, and rodgersia. I would introduce kniphofia for its colour value. Of smaller plants I should select those which afford a suggestion of exotic form — funkia, *Bocconia cordata*, crown imperial, Solomon's Seal, coltsfoot, verbascum, ferns, and many others which I need not enumerate.

The beauty of a pseudo-tropical garden made on these lines would consist in the variety and special character of the foliage, and everything being hardy, it would not involve a tithe of the trouble and expense of a subtropical garden.

The graceful habit and beauty of flower of our hardy climbers make them valuable material

for the gardener. For the pergola, walls and fences, arches, and for special effects amongst trees and shrubs, they are indispensable. As subjects for the house walls they have their best opportunity for full development, because of the height and extent of the wall surfaces. With so many charming examples of climber-covered houses around us it is remarkable that the gardener so often overlooks the possibilities of creating a beautiful picture on the house walls. The oft-repeated fallacy that growth of this kind causes damp walls has already been refuted. It doubtless accounts for the studied neglect of this part of the garden picture. In my opinion nothing helps to bring the house into harmony with its garden surroundings so effectually as the treatment of its walls with creepers, particularly those which tend toward a full and informal habit, clustering in rounded masses as they ascend and benignly concealing the angles and straight lines of the brickwork. There should be creepers to flower at all seasons and for every aspect. Of purely foliage ones I should not be lavish, particularly of such subjects as Boston ivy (*Ampelopsis tricuspidata*), which hugs the

walls in a thin sheet of uniform surface. But of the climbing roses, clematis, jasmines, honeysuckle, and wistaria we cannot be too prodigal.

I have already referred to the necessity for not overdoing the whites in the garden. White tells more strongly than any colour, and scattered whites have a tendency to degrade the colours with which they are associated. But white may be used in a way to produce an admirable effect if it be the right kind of white. It is essential that it be used in the mass, and I know of no more beautiful feature for a garden than a dense group of *Lilium candidum*, its pure white petals softened and modified by the yellow anthers and their reflections.

There are certain plants and shrubs which have a special claim to be treated as "specimens," affording us a means of adding interest to a lawn. One of the best of these is the yucca, which is hardy and evergreen, and throws up a fine, bold spike of creamy flowers. It should be placed where it will be sheltered from cold winds, and preferably in association with other shrubs.

The pampas grass is another equally valuable plant, too familiar to need description. It is

best placed in an isolated position where it will have space to throw out its graceful, arching foliage, and if possible it should have a foliage background for the creamy plumes it produces so freely.

Terrace walls, whether the brick or masonry kinds so dear to the architect, or the rough rubble walls which with advantage may take their place, should never be allowed to be bare. The former may be clothed with creepers, the latter with alpines. Shady corners, and spaces unsuitable for flower-growing, may be planted with ferns, which thrive best in shade if they have protection from cold winds.

An interesting feature in an English garden was called an "Orchid Dell" by the owner. It was a hollow on a chalky hillside, which had been excavated at some earlier period, and, before taken in hand, had supported a straggling growth of hazel. Soil had gravitated to the bottom, and had become overgrown with fine grass. Native ferns were planted freely about the hazel stems. A rough spiral path was carried from the floor to the brink of the dell, threading its way through the thicket. In the grass, native orchids were planted, and the con-

ditions proved favourable to their welfare. The common bluebell, wild anemone, and primrose of the woods were added, being confined mainly to the steep banks. The effect in spring was beautiful, the flowers losing nothing by being in partial shade. The dell was entered through a natural arch of "Traveller's Joy" — the wild clematis. I mention this as an instance of what may be done to beautify what by many would be regarded as a piece of waste ground suitable only as a dumping place for garden rubbish. An almost exact counterpart is possible on most of the garden spots of America.

In spite of our best efforts to make the garden beautiful at every point, it will happen at times, unfortunately, that ugly objects intrude into the picture. A stable building, potting-shed, garage, or other structure, necessary but unbeautiful, offends the eye, and it should be the gardener's care to conceal it. Much may be done by planting trees and shrubs, but they take time to grow to sufficient size, and whilst the natural screen is in progress of development it is well to erect a temporary one of trellis, training some quick-growing climbers upon it.

In certain cases there may be insufficient room for the natural screen, and then the trellis should be a permanent structure, built substantially of stout materials.

I might enumerate a vast number of suggestions and expedients for creating beauty in the garden details, but I could not hope to exhaust the subject within the limits of this chapter. Each garden provides its own particular set of problems, and the main point for the garden maker is to be alive to opportunities for interesting work and to avail himself of them to the utmost. Though I have emphasized the importance of studying the general effect, and of treatment adapted for securing a broad, well-composed, and interesting picture, I regard it as equally important that the details should be as carefully studied. A garden is seen in two ways — as a pleasant place affording a sense of space, repose, and variety of form and colour, and as something to examine in detail for its interest of flower and plant. In time the outlines of the garden become so familiar to the owner that they only feebly impress him, but not so the beds, borders, and other parts of the garden devoted to flower

display. The latter are ever changing with the seasons and growth of the plants, and thus are places of perennial interest. This, I think, is sufficient reason for attention to the smaller garden problems, and I regard such problems, so far as they involve constructive work — in which I include planting — as coming within the province of the garden designer. Whether his efforts are directed to the removal or concealment of some eyesore, or to the creation of some pleasing effect in colour, or to providing a means of growing some specially interesting kind of plant, the result will be of value to the garden as "finish," that quality which will stamp his work with the character of thoroughness.

A reserve plot is a useful adjunct to any garden. It may be placed wherever a convenient spot is available, but most often it is associated with a kitchen garden, which is perhaps the best practice. It is just a place for raising and pricking out seedlings, but if space permits it may be made to serve the further purpose of growing flowers for cutting. Most garden owners are only too delighted to offer plants to their friends, and the reserve

garden is the place from which they may distribute surplus stuff without making gaps in the beds. It also conduces to economy, for nearly all the hardy perennials may be easily raised from seed in the reserve garden, and it is a source of much interest so to raise them.

CHAPTER XXIII

The Garden and the Flower

In the foregoing pages I have endeavoured to make it clear that the garden, considered as a place for flower-growing, stands in relation to the flower as a house to its inmates; in other words, that the garden is for the flower or plant. For claiming this very obvious relationship, I have elsewhere incurred some amount of criticism, which significantly came from persons interested in architecture. I do not propose to answer such criticism in detail, but I may fittingly conclude this book with some general remarks on the subject.

With no sort of prejudice against architects, I may say that a certain few of them seem to regard the garden as a place in which to expend an overflow of architectural effort, and if we may judge by results, these outlying works are more often than not conceived without the remotest understanding of the requirements

of the flower. This is by no means surprising when it is considered that the architect is not always an expert horticulturist.

I disclaim any monopoly of opinion in this matter. The subject has been dealt with by abler hands than mine. Mr. W. Robinson, in "The English Flower Garden," frames an elaborate indictment against carrying "the dead lines of the builder into the garden, which above every other artificial creation should give us the sweetest fellowship with Nature."

Any architectural features we may permit should be there of necessity, rather than by deliberate intention. They must be the outcome of the site, demanded by the nature of the ground, or by considerations of convenience for the users of the garden. And when introduced with such good reason they must be so disposed as to help rather than to discount the garden picture.

The terrace of exaggerated width, laden with heavy architectural detail, which effectually eclipses the slope at its foot, where perhaps the ground is best suited for flower culture, is an instance of ill-judged architectural treatment.

Reverting to the work of the garden designer,

whether he be professional or amateur — and I trust that this book may encourage the owners of many gardens to be their own designers — I wish to plead the cause of the flower, and to claim for it a supreme position in the garden.

Were it not that we have flowers I question whether many of us would be garden owners. But having such material in abundance and endless variety, it is surely culpable to treat it as a secondary and subordinate thing. Thus the aim of the garden designer fails if the result of his efforts is something in which a dozen incongruous objects claim notice, each and every one of them competing with the flower.

Not only must we give our flowers the sunny positions where they will thrive under the best conditions for their welfare, but we must see that their other needs are met in such matters as soil and shelter. We must also provide them with harmonious surroundings, and a background, whether turf or foliage, to give due value to their colours; and, before all things, we must allow them to grow as nature intended, not stiffly in rows, nor pinched into uniformity of shape and size, but after the manner of their

kind. For each and every plant has individual characteristics of foliage and habit, qualities which are as admirable as the more obvious one of colour.

Thus in planning a flower garden we must exercise a wise restraint, not over-elaborating details nor multiplying accessories, lest we detract from the beauty of the flower. Only by such means can we secure the truly artistic garden.

But, says the wise man, "Your mignonette has overgrown your path, and one of your nasturtiums has strayed from its string and fastened on to the rose standard — your garden is untidy." Well, let it be so. I can suffer such untidiness, since I fail to see in what degree, if at all, it mars my garden picture. Does not the mignonette break the rigid line of the path, and show us that Nature laughs at our formal boundaries? Has not the errant nasturtium created a gorgeous festoon of flower and foliage which we should never have had courage to originate?

Put the artist into your garden and bid him paint. Will he go to your formal bed of geraniums and set it on canvas? No! Rather will

he seek out some tangled corner, where the expiring hollyhocks, wind-buffeted and leaning, keep company with the feathered sprays of the tardy starwort.

After all, the whole question is the simple one of good taste, harmony in details, and due consideration for utility and consistency throughout the garden.

With some of us the sense of what is fitting comes instinctively, with others it has to be learnt. The purpose of this book will be well served if it be the means of helping the latter to recognize the significance of art in the garden, and of showing the way to a point of view in matters horticultural, which, in spite of ever-increasing popular interest in the subject, hitherto has not received sufficient consideration from those who essay the task of garden making.

APPENDIX

APPENDIX

ROSES

SPACING FOR ROSE PLANTS

Standards	3 feet
Pillars	3 "
Bushes	1½ to 2 "

Roses may be planted from October to March when the weather is open

ROSE CLASSES

CLASS	TYPE
Hybrid Perpetual	Louis van Houtte
Hybrid Tea	La France
Hybrid China	Fulgens
Tea	Gloire de Dijon
Noisette	Celine Forestier
Bourbon	Souvenir de la Malmaison
China	Old Crimson Monthly
Polyantha	Gloire des Polyanthas
Brier	Penzance Seedlings
Provence	Moss
Damask	York and Lancaster
Ayrshire	The Garland
Sempervirens	Felicit Perpetue
Boursault	Amadis
Alba	Celestial
Gallica	Blanchfleur
Wichuraiana	Dorothy Perkins
Banksia	Lutea

ROSE SPECIES

BOTANICAL NAME	COLOUR	NURSERY NAME
Rosa alpina	Rose	Alpine Rose
altaica	Lemon white	
Andersoni	Rose pink	
berberifolia	Yellow	Yellow Persian
blanda	Salmon pink	
bracteata	White	Macartney Rose
Camellia	White	
canina	Blush	Dog Rose
cinnamonea	Rose pink	Cinnamon Rose
Lawrenceana	Red	Fairy Rose
lævigata	White	Cherokee Rose
lucida	Pink	Lucida
lutea	Yellow	Austrian Brier
moschata	White	Musk Rose
multiflora	White	Polyantha Simplex
pimpinellifolia	Pink	Scotch Burnet Rose
Pissardi	White or pink	
polyantha	White	Bramble Rose
rubrifolia	Pale rose	Prairie Rose
rugosa	Blush	Apple Rose
setigera	Pink	Prairie Rose
spinosissima	White	Scotch Rose
xanthina	Lemon yellow	

ROSES FOR TOWN GARDENS

The following roses will thrive under unfavourable conditions of atmosphere and soil, such as are found in town and suburban gardens:

Hybrid Perpetuals	*Teas and Hybrid Teas*
A. K. Williams	Camoens
Anna Alexieff	Captain Christy
Baroness Rothschild	Enchantress
Clio	Gloire de Dijon
Dupuy Jamain	Grace Darling
Duke of Edinburgh	Gruss au Teplitz
Gen. Jacqueminot	La France

Hybrid Perpetuals	*Teas and Hybrid Teas*
Jules Margottin	Madame Alfred Carrière
Louis van Houtte	Madame Lambard
Mme. Victor Verdier	Maman Cochet
Magna Charta	Marie van Houtte
Mrs. J. Laing	Reine Olga de Wurtemburg
Merveille de Lyon	Viscountess Folkestone
Prince Camille de Rohan	Waltham Climber
Ulrich Brunner	

Noisettes (*For the South and Southwest*)

Aimée Vibert Céline Forestier

Fellenburgh

Also many of the Polyantha and Hybrid China Roses will stand town life.

Moss Roses and Sweetbriers are not satisfactory, because their foliage collects soot from the atmosphere.

ROSES FOR ARCHES AND PERGOLAS

NAME	COLOUR
Aimee Vibert	White
Aglaia	Yellow
Ard's Rover	Crimson and maroon
Bennett's Seedling	White
Carmine Pillar	Bright crimson
Crimson Rambler	Crimson
Dorothy Perkins	Bright pink
Dundee Rambler	Pink (white-eyed)
Euphrosyne	Rose
Felicite Perpetue	Cream
Flora	Pink
Gloire de Dijon	Buff
Gracilis	Rosy red
Jersey Beauty	Yellow
Leuchtstern	Pink (white-eyed)
Macrantha	Flesh
Madame Alfred Carriere	Cream
Perle des Nieges	Pure white
Rampante	Pure white

ROSES FOR ARCHES AND PERGOLAS—*Continued*

NAME	COLOUR
Reine Olga de Wurtemburg	Rose
The Garland	Nankeen and pink
Reine Marie Henriette	Carmine
Waltham Rambler	Pink (pale centre)
W. A. Richardson	Coppery orange
All the Wichuraiana hybrids	Various; deep pink to white and cream

ROSES BY COLOUR

In planting for colour effect the following table will prove useful to the gardener. These roses are all Hybrid Perpetuals, Teas, Hybrid Teas, or Noisettes:

Deep Red, approaching Black

Abel Carrière
Dr. Hogg
Emperor
Jean Liabaud
Sultan of Zanzibar
Xavier Olibo

Full Red

Baron Haussmann
Duke of Fife
Liberty
Roisieriste Jacobs
Souvenir d'Angers

Deep Crimson

Baron de Bonstettin
Betty Berkeley
Eugene Fürst
Louis van Houtte
Reynolds Hole
Sir Rowland Hill

Crimson

A. K. Williams
Bardou Job
Camille Bernardin
Duke of Albany
Glory of Waltham
Horace Vernet
John Bright
Prince Arthur
Victor Hugo

Light Crimson

Beauty of Waltham
Captain Hayward
Countess of Rosebery

Rose

Alpaide de Rotalier
Camoens
Charles Dickens

Light Crimson

Duchess of Bedford
Etienne Dupuy
Gruss au Teplitz
Pride of Reigate

Rose

uchesse de Morny
Jeannie Dickson
Marie Verdier
Madame Bérard
Madame Lambard

Pink (Salmon)

Aurora
Captain Christy
Caroline Testout
Clara Watson
Ernest Metz
Ethel Brownlow
Madame Edmée Metz
Maman Cochet
Pride of Waltham

Pink (Pale)

Baroness Rothschild
Duchess of Fife
Killarney
La France
Madame Gabriel Luizet
Mrs. Cocker
Mrs. John Laing
Madame Camille
Madame Paul Gruetz
Mrs. Alfred Byass
Pink Rover
Viscountess Folkestone

White

Baronne de Meynard
Boule de Niege
Coquette des Blanches
Frau Karl Druschki
Gardenia
Madame Lacharme
Niphetos
Souvenir de S. A. Prince

Ivory

Alice Graham
Alice Lindsell
Bessie Brown
White Lady
Gloire de Lyonnaise
Marie Ducher
Mrs. David McKee

Lemon

Beauté Lyonnaise
Caroline Kuster
Céline Forestier
Cloth of Gold
Duchess of Portland
Etoile de Lyon
Medea
Maréchal Niel

Buff

Abricoté
Gloire de Dijon
Madame Falcot
Safrano

Orange

Beauté Inconstante — Ma Capucine
Lady Roberts — Souvenir de Pierre Notting
W. A. Richardson

ROSE HEDGES

The common Sweetbrier and the Penzance Hybrids make excellent hedges as shelter for rose beds, and are proof against exposure.

Charming hedges also may be made of the Multiflora, Ayrshire, Sempervirens, Scotch and Wichuraiana roses, which in all cases should be on their own roots.

Some of the Hybrid Teas and Hybrid Perpetuals are also quite suitable, when on brier or on their own roots.

HARDY PERENNIALS BY COLOURS

In the planting of herbaceous borders the best effects are only to be obtained by a careful study of *colour* and *succession*. The following list embraces a selection of the best hardy perennials for colour effect, and their season of flowering has been added to assist the gardener in arranging them for succession. The column giving heights will suggest the best position in the border in relation to its width.

CRIMSON

AVERAGE HEIGHT IN FEET	NAME	SEASON
1	*Adonis autumnalis*	May to July
1	*Æthionema grandiflorum*	May to August
1½	*Agrostemma (Lychnis) Flos-Jovis*	June and July
⅓	*Anemone Japonica*	September to November
2	Antirrhinum	June to October
1	*Armeria latifolia*	April to June

CRIMSON—*Continued*

AVERAGE HEIGHT IN FEET	NAME	SEASON
4	*Aster*, Mrs. Rayne-	September to November
5	*præcox*	August to November
5	*rubra*	August to October
½	*Aubrietia deltoides* var. *Leichtlini*	April to June
4	*Boltonia latisquama*	July to October
1½	Carnation	June to September
1½	*Centaurea dealbata*	Summer
2	*montana*, var. *rosea*	Early Summer
1½	*Cyanus*	August to October
2½	*Centranthus ruber*	June to August
2½	Chrysanthemum	August to November
1	*Cyclamen Coum*	January to March
1	*Dianthus superbus*	Summer
2	*Dicentra spectabilis*	March to August
4	*Epilobium angustifolium*	June to August
3	Gaillardia	June to November
½	Helianthemum	May to August
¼	*Lychnis Chalcedonica*	Early Summer
1	*viscaria*, var. *splendens*	May to July
1½	*Ononis rotundifolia*	July
3	Pæony	Summer
1½	*Pentstemon barbatus*	June and July
2	Phlox (herbaceous)	April to September
1	Pink	Summer
¾	*Polygonum affine*	August to October
2½	*amplexicaule*	September and October
2	*Potentilla Thuberi*	Summer
½	Primrose	March to May
2	*Primula Japonica*	Spring
3	*Pyrethrum roseum*	June to August
3½	*Rudbeckia elegans*, var. *rosea*	July to September
3½	*Salvia Grahami*	July to September
¼	*Saponaria ocymoides*	May to August
2½	*Senecio pulcher*	July to September
1	*Stachys Betonica*	June to August
1	*Statice Tatarica*	August and September
¼	*Thymus Serpyllum* var. *coccineus*	June to August
3½	*Ulmaria palmata*	July and August

PINK

AVERAGE HEIGHT IN FEET	NAME	SEASON
2	*Anemone Japonica*	September to November
1 to 5	Aster, various	August to November
2½	*Astilbe Chinensis*	July and August
½	*Bellis perennis*	April to July
1½	Carnation	June to September
2½	Chrysanthemum	August to November
1½	*Coronilla varia*	June to September
½	*Dianthus plumarius*	May to July
1½	*Erigeron speciosus*	May to October
1½	*Heuchera sanguinea*	May to October
½	*Lychnis alpina*	April to June
1½	*Flos-cuculi*, var. *plenissima*	June to September
2½	*Œnothera speciosa*	August to October
1½	*Ononis rotundifolia*	July
3	Pæony	Summer
2	Phlox (herbaceous)	April to September
½	*amœna*	May
⅓	*subulata*	April and May
3	Pyrethrum	June to September
2	*Sedum spectabile*	August and September
4	*Valeriana officinalis*	Spring

SCARLET

1½	*Antholyza Crenonia*	July to September
1½	Carnation	June to September
3	*Delphinium cardinale*	July and August
3	Gaillardia	June to November
1	*Geum Chiloense*, var. *miniatum*	May and June
1½	*Heuchera sanguinea*, var. *splendens*	June to October
3	*Lobelia cardinalis*	August and September
3	*Lychnis Chalcedonica*	June and July
2	*Mimulus cardinalis*	June to September
2½	*Monarda didyma*	June to September
3	*Papaver orientale*	May to August
2	Phlox (herbaceous)	April to September

ORANGE

AVERAGE HEIGHT IN FEET	NAME	SEASON
1½	*Cheiranthus Cheiri*	May
3	Gaillardia	June to November
2	*Geum rivale*	May and June
¾	*montanum*	May and June
½	*Glaucium Fischeri*	July
2½	*Helenium Hoopesii*	May and June
½	*Helianthemum amabile*	June
½	*vulgare* var. Fireball	May to August
4	*Heliopsis lævis*	July to October
3	*Hemerocallis aurantiaca*	June and July
1	*Hieracium aurantiacum*	June to October
3	*Hypericum aureum*	August and September
2	*Inula grandiflora*	June
2	*glandulosa*	July and August
4	Kniphofia	September and October
1	*Mimulus glutinosus*	May to August
1	*Papaver nudicaule*, var. *miniatum*	April to July — August to October
1½	*Rudbeckia speciosa*	July
1	*Trollius Asiaticus*	April and May — Aug and September

YELLOW

¾	*Achillea tomentosa*	May to September
4	*Aconitum Lycoctonum*	July to September
3½	*Actinomeris squarrosa*	July to September
1	*Alyssum argentium*	June and July
½	*montanum*	May to July
1	*saxatile*	April to June
½	*speciosum*	May to July
1½	*Anthemis tinctoria*	May to October
2	Aquilegia	May and June
1	Artemisia	August to November
3	*Asphodeline lutea*	June to August
2	*Berberis vulgaris*	May and June

YELLOW—*Continued*

AVERAGE HEIGHT IN FEET	NAME	SEASON
2	*Buhpthalmum salicifolium*	June to August
1½	Carnation	June to September
5	*Centaurea Babylonica*	July
4	*macrocephala*	July to September
5	*Cephalaria alpina*	June to August
1½	Cheiranthus	March to August
2	*Chelidonium majus*	May and June
2½	Chrysanthemum	August to November
2	*Coreopsis grandiflora*	June to September
1	*Corydalis lutea*	April to September
2	*Digitalis lutea*	July
1½	Doronicum	May to July
½	*Draba aizoides*	May and June
1	*Erysimum ochroleucum*	April to June
1½	*Grindelia patens*	Autumn
5	*Helenium autumnale*	August and September
1½	*pumilum*	June to October
3 to 7	Helianthus (various)	August to November
6	*Inula Helenium*	July to September
1 to 3	Iris (various)	April to July
1	*Linum arboreum*	May and June
1	*Mimulus luteus*	June to September
1½	*Œnothera fruticosa*	June to August
½	Pansy	April to October
2	*Ranunculus acris*	May to September
4	*Rudbeckia Californica*	August and September
5	*laciniata*	July to September
3½	*Scabiosa lutea*	July to September
2 to 6	Solidago (various)	August to October
1 to 2	Trollius (various)	May to July
2 to 6	Verbascum (various)	June to September
½	Viola	April to October

WHITE

2	*Achillea Ptarmica*, The Pearl	June to October
5	*Aconitum Napellus*	July and August
1½	*Alyssum Maritimum*	March to July

WHITE—*Continued*

AVERAGE HEIGHT IN FEET	NAME	SEASON
3	*Anemone Japonica*, var. *alba*	September and October
3	Antirrhinum	July to September
2	Aquilegia	May and June
½	*Arabis alpina*	April to June
2	*Asphodelus albus*	June and July
2 to 6	Aster (various)	August to November
¼	*Bellis perennis*	April to July
½ to 6	Campanula (various)	June to September
2	Carnation (various)	June to September
2	*Centaurea montana*, var. *alba*	May to July
2½	*Centranthus ruber* var. *albus*	June and July
2½	Chrysanthemum	August to November
4	*Cimicifuga racemosa*	July and August
½	*Erinus alpinus*, var. *albus*	May to July
2	*Geranium pratense* var. *album*	June to September
2	*Gillenia stipulacea*	June to August
1	*Iberis sempervirens*	May and June
1 to 3	Iris (various)	April to July
5	*Lupinus polyphyllus*, var. *albus*	June and July
2	*Malva moschata*	June to September
1	*Myosotis alpestris*, var. *albus*	May to July
3	Pæony	Summer
½	Pansy	April to October
1	*Papaver nudicaule*	April to July — August to October
2	Phlox (herbaceous)	April to September
4	*Polygonum Sieboldi*	July
½	Primrose	March to May
¾	*Prunella vulgaris*	June to September
4	*Pyrethrum uliginosum*	August and September
3	*Sidalcea candida*	June
½	*Silene alpestris*	May to July
5	*Spiræa Aruncus*	June and July
1½	*Tradescantia Virginica*, var. *alba*	May to August
1½	*Veronica longifolia*, var. *alba*	June to August
1	*spicata* var. *alba*	June and July
½	Viola	April to October

GREEN

AVERAGE HEIGHT IN FEET	NAME	SEASON
1	*Alchemilla alpina*	June and July
1	*Helleborus orientalis*	March and April
3	*Polygonatum multiflorum*	May and June
8	*Polygonum Sachalinense*	August to October

BLUE

3½	*Aconitum Napellus*	July and August
½	*Ajuga Genevensis*	May
3½	*Anchusia Italica*	June to August
1	*Anemone (Hepatica) angulosa*	April and May
2	Aquilegia	May and June
2 to 5	Aster (various)	August to November
2	*Centaurea montana*	June to September
4½	Delphinium (various)	July and August
3½	*Echinops Ritro*	July and August
2½	*Eryngium amethystinum*	June to September
1½	*Geranium Ibericum*	June to September
1 to 3	Iris (various)	April to July
½	*Lithospermum prostratum*	May to July
5	*Lupinus polyphyllus*	June and July
1	*Myosotis dissitiflora*	April to July
1	*sylvatica*, var. *alpestris*	May and June
¼	*Omphalodes verna*	April and May
2	*Polemonium cæruleum*	May to July
½	Primrose	March to May
3	*Salvia azurea*	August and September
2	*patens*	July to September
1½	*Veronica amethystina*	May to July
¾	*incana*	June and July
1	*prostrata*	May to August

MAUVE

1	*Arabis muralis*	March to September
2 to 6	Aster (various)	August to November
¼	*Aubrietia deltoidea*	April to June
½ to 4	Campanula (various)	June to September

MAUVE—*Continued*

AVERAGE HEIGHT IN FEET	NAME	SEASON
2	Carnation (various)	June to September
—	*Centaurea montana*	September
2	*Erigeron speciosus*	June and July
½	*Erinus alpinus*	May to July
2	*Geranium collinum*	May to July
2½	*pratense*, var. *lilacina*	June to September
1	*Iberis Gibraltarica*	May and June
1 to 3	Iris (various)	April to July
½	Pansy	April to October
2½	Papaver (various)	May and June
2	Phlox (herbaceous)	April to September
½	*subulata*, Fairy	April and May
½	*frondosa*	April and May
½	*Primula acaulis*, var. *Crousii*	April and May
2	*Saponaria officinalis*	July to September
1	*Statice speciosa*	July and August
½	Viola	April to October

VIOLET

¼	*Anemone Pulsatilla*	April to June
2	Aquilegia	May and June
1 to 4	Aster (various)	August to November
½	*Aubrietia deltoidea*	April to June
1½	*Campanula glomerata*	June to August
1½	*rhomboidalis*	June and July
½	*Erinus alpinus*	April to June
2	*Eryngium alpinum*	July and August
2½	*Geranium pratense*	June to September
1 to 3	*Iris* (various)	April to July
2½	*Liatris scariosa*	August and September
½	Pansy	April to October
1	*Pentstemon procerus*	July
¼	*Primula capitata*	May and June
1	*Stachys grandiflora*	June and July
2	*Veronica longifolia*, var. *subsessilis*	August and September
¼	Violet	Spring

PURPLE

AVERAGE HEIGHT IN FEET	NAME	SEASON
4	*Asclepias Cornuti*	June and July
1 to 5	Aster (various)	August to November
2	*Centaurea splendens*	June to September
1	*Dianthus plumarius*	June to September
1	*Dicentra eximea*	June and July
1	*Erigeron glaucus*	May and June
1½	*Erodium Manescavi*	June and July
5	*Eupatorium purpureum*	July to September
1½	*Geranium Ibericum*	June to September
1 to 3	Iris	April to July
½	*Lamium maculatum*	May to July
4	*Liatris pycnostachya*	August and September
3	*Lobelia Gerardi*	July to October
½	Pansy (various)	April to October
3	*Pentstemon barbatus*	June to August
1½	*diffusus*	June and July
¾	*Prunella Webbiana*	June to September
2½	*Salvia pratensis*	June and July

SOME PERENNIALS THAT BLOOM THE FIRST YEAR FROM SEED

COMMON NAME	SCIENTIFIC AND TRADE NAME	HEIGHT IN FEET	TIME OF FLOWERING	COLOUR
Snapdragon	*Antirrhinum majus*	1–3	July—Aug.	Red and purple to white
Blue-flowered cupid's dart	*Catananche cærulea*	2–3	June—Aug.	Blue
Mouse-ear chickweed	*Cerastium tomentosum*	½	All summer	White
Perennial coreopsis	*Coreopsis lanceolata*	1–2	Aug.—Frost	Yellow
Larkspur	*Delphinium formosum*	½–6	April—Sept.	Blue, scarlet, yellow
Sweet William	*Dianthus barbatus*	¾–1½	June—July	Many coloured
Scotch pink	*Dianthus plumosus*	1	May—June	White, pink, and purplish
Moldavian balm	*Dracocephalum Moldavicum*	2	Aug.—Sept.	Blue
Blanket flower	*Gaillardia aristata*	2	June—Sept.	Yellow varying to red
Horned poppy	*Glaucium luteum*	½	July—Sept.	Yellow or orange
French honeysuckle	*Hedysarum coronarium*	2–4	Aug.—Sept.	Red
Rocket	*Hesperis matronalis*	2–3	June—Aug.	White to purple
Sunset hibiscus	*Hibiscus Manihot*	3–9	July—Aug.	Pale yellow
Man-of-the-earth	*Ipomœa pandurata*	2–12	Sept.—May	White
Column flower	*Lepachys columnaris*	1–3	June—Sept.	Yellow
Flax	*Linum Lewisii*	1–2	July—Aug.	Sky blue
Honesty	*Lunaria annua*	1½–2½	May—June	Pink, purple
Musk mallow	*Malva moschata*	1–2	July—Sept.	Rose or white
Red monkey flower	*Mimulus cardinalis*	1–2	All summer	Red and yellow
Monkey flower	*Mimulus luteus*	1–3	All summer	Yellow
Forget-me-not	*Myosotis palustris*	½	May—June	Blue
Iceland poppy	*Papaver nudicaule*	1–1½	May—Oct.	Yellow
Polyanthus	*Primula Polyantha*	¼	April	Yellow, and red and yellow

SOME PERENNIALS THAT BLOOM THE FIRST YEAR FROM SEED—*Continued*

COMMON NAME	SCIENTIFIC AND TRADE NAME	HEIGHT IN FEET	TIME OF FLOWERING	COLOUR
Silver sage	*Salvia argentea*	2	May—June	White
Sidalcea	*Sidalcea malvæflora*	1–6	Aug.—Sept.	Purple
Throatwort	*Trachelium cæruleum*	1–3	Aug.—Sept.	Blue or white

NOTE—In order that you may save a year by having the above listed perennials bloom the first year, you must sow the seed early in the spring, in a coldframe or in boxes indoors. Sow the seed about the first of March. Use a good seed soil, which may be made by thoroughly mixing together equal parts of sand, leaf-mold, well rotted sod and well-rotted horse-manure. Place the seed in rows about four inches apart and cover lightly. As a general thing, it is a good thing not to cover over seeds thicker than their diameter. Water with a fine-rosed watering pot to firm the cover. It is a good plan to keep the seed-bed shaded until the first leaves show above the ground, when the light should be admitted gradually.

It will be advisable to harden off the plants before planting in the open. This is done, if you have a hotbed, by giving them plenty of air, both day and night, except in case of frost. If you have started the plants in the house place them out on the back porch in a sunny place, but be careful that they do not dry out. They will need more water here than in the house.

HARDY BOG OR MARSH PLANTS

These will thrive in wet soil by the side of ponds and streams.

Achillea (Yarrow)
Acornus Calamus (Sweet flag)
Arundo Donax (Giant reed)
Butomus umbellatus (Flowering rush)
Calla palustris
Caltha palustris and *flore-pleno* (Marsh marigold)
Cyperus strigosus
Epilobium (Willow herb)
Equisetum hyemale (Horse-tail rush)
Eupatorium purpureum (Joe-pye weed)
Ferula communis (Giant fennel)
Galega officinalis (Goat's rue)
Habenaria fimbriata (Purple-fringed orchis)
psycodes (Smaller purple-fringed orchis)
Hemerocallis (Day lily)
Iris lævigata (Japanese iris)
Pseudacorus (Yellow water flag)
versicolor (Larger blue flag)
Lathyrus palustris (Marsh pea)
Lilium Canadense (Wild yellow lily)
superbum (American Turk's cap lily)
Lobelia cardinalis (Cardinal flower)
syphiletica and var. *alba*
Lythrum salicaria (Purple loose strife)
var. *roseum superbum* (Pink loose-strife)
Menyanthes trifoliata (Buck bean)
Mimulus ringens (Square-stemmed monkey flower)
Miscanthus Sinensis (Eulalia)
Myosotis palustris var. *semperflorens* (Ever-flowering forget-me-not)
Osmunda regalis (Flowering fern)
Panicularia Americana (Red meadow-grass)
nervata (Nerved manna grass)
Parnassia Caroliniana (Grass of Parnassus)
Polygonum Sieboldi
Pontederia cordata (Pickerel weed)

HARDY BOG OR MARSH PLANTS—*Continued*

Primula Japonica
Rhexia Virginica (Meadow beauty)
Rodgersia podophylla
Sagittaria latifolia (Common arrow-head)
Sarracenia Drummondii (Great trumpet leaf)
purpurea (Pitcher plant)
Saxifraga Pennsylvanica (Swamp saxifrage)
Senecis Japonicus (Japanese groundsel)
Silphium laciniatum (Compass plant)
perfoliatum (Cup plant)
Spiræa Aruncus (Goat's beard)
palmata (Palmate-leaved meadow sweet)
Tradescantia Virginiana (Spiderwort)
Trollius (Globe flower)
Zygadenus venenosus (Poisonous zygadenus)

AQUATIC OR WATER PLANTS

Acornus gramineus var. *variegatus* (Striped sweet flag)
Alisma Plantago (Water plantain)
Aponogetum distachyum (Cape pond weed)
Brasenia peltata (Water shield)
Caltha palustris var. *flore-pleno* (Double marsh marigold)
Iris (Thrives both in bogs and shallow water)
Lymnanthemum nymphoides (Fringed buckbean)
Nelumbium luteum (American lotus)
speciosum (Indian lotus)
var. *album* (Magnolia lotus)
Nuphar advena (Common spatter dock)
Kalmianum (Small yellow pond lily)
luteum (European yellow lily)
Nymphæa alba (White water lily)
var. *candidissima* (Purest pond lily)
(Fourteen other species of Nymphæa are good aquatics)
Orontium aquaticum (Golden club)
Peltandra Virginica (Arrow arum)
Pontederia cordata (Pickerel weed)
Sagittaria sagittæfolia var. *flora-pleno* (Old world arrow-head)

AQUATIC OR WATER PLANTS—*Continued*

Scirpus lacustris, var. *zebrina* (Great bulrush)
Typha latifolia (Broad-leaved cat-tail)
Zizania aquatica (Wild rice)

PLANTS WITH WHITE, GRAY, OR GLAUCOUS FOLIAGE

FOLIAGE	NAME	COLOUR OF FLOWER	HEIGHT IN FEET
Silvery	*Achillea Ægyptica*	Pale Yellow	2
	Clavennæ	White	¾
	Siberica	"	2
	umbellata	"	½
	Alyssum argentium	Yellow	1
	Antennaria dioica, var. *tomentosa*	White	½
	Artemisia Absinthium	Yellow	1½
	vulgaris	"	1½
Gray	Aubrietia	Various	½
	Bocconia cordata	Buff	7
Silvery	*Centaurea Babylonica*	Yellow	7
	Cerastium Biebersteinii	White	½
	Cineraria maritima	Yellow	2
Glaucous	Dianthus (Pinks and Carnations)	Various	
	Echinops Ritro	Blue	3
	Elymus arenarius (Grass)	—	3½
	Eryngium Oliverianum	Blue	3½
	Festuca glauca (Grass)	—	½
Woolly White	*Helichrysum grandiflorum*	Yellow	3½
	Heuchera hispida	White and Purple	3
	pubescens	Reddish Yellow	1
Silvery gray	*Marrubium candidissimum*	White	1
Silvery	*Onopordon Acanthium*	Purple	6
	Othonna cheirifolia	Yellow	1
Gray	*Phlomis Russelliana*	"	3
Silvery	*Santolina chamæcyparissus*	"	1½
	Saxifraga	Various	
Glaucous	*Sedum Ewersii*	Rose	¼
	glaucum	Pink	½
	spectabile	"	2
Silvery	*Stachys lanata*	Rosy Mauve	1½
Gray	Verbascum	Yellow	6
Silvery	*Veronica incana*	Purple	½

HARDY BULBS, CORMS, AND TUBERS

Whether for planting in formal beds, or for effect in the grass or wilder parts of the garden, bulbs are invaluable to the gardener. The following selection includes all that is best for these purposes. Those marked A will thrive in shade or partial shade, or in full sun. Those marked B must only be grown in shade. Those marked R are suitable for the rock garden. Those unmarked require full sun.

NAME	FLOWERING PERIOD	COLOUR	NOTES	
Acis autumnalis	Autumn	Pinkish white		R
Allium Moly	Spring and summer	Yellow		A
Alstremeria aurantica	Summer	Orange	Peruvian lily	A
Amaryllis Belladonna	Autumn	Pale rose		
Anemone coronaria	Spring	Various	Poppy anemone	A
blanda	Early spring	Blue		AR
fulgens	Early spring	Scarlet		A
Japonica	Autumn	White or rose		A
nemorosa	Spring	White		B
Palmata	Spring	Yellow		B
ranunculoides	Early spring	Yellow		B
stellata	May	Various	Peacock anemone	AR
Anthericum Liliastrum	Summer	White	St. Bruno's lily	A
Arum pictum	Summer	Violet	A few other hardy forms	B
Asphodelus albus	Summer	White	Protected slightly in cold locations	A
Brodiæa	Summer	Various		
Bulbocodium vernum	Spring	Purple		R
Calla		White	Bog plant	
Calochortus	Spring and summer	Various	A large number of species	A
Camassia	July	Blue or white		A
Canna	Summer	Red		
Chionodoxa	Spring	Blue		A
Colchicum	Fall	Purple to white	Autumn crocus	A
Convallaria	Spring	White	Lily-of-the-Valley	B
Corydalis solida	Spring	Purplish	Fumitory	

NAME	FLOWERING PERIOD	COLOUR	NOTES	
Crinum longifolium	Late summer	Pink		
Crocus	Spring	Various		
Dahlia	Summer	Various		
Eranthis hyemalis	Spring	Yellow	Winter aconite	A
Eremurus Himalaicus	Spring	White		A
Erythronium Dens-Canis	Spring	Various	Dog-tooth violet	B
Fritillaria Meleagris	Spring	Various		B
Imperialis	Spring	Various	Crown Imperial	B
Galanthus	Spring	White	Snowdrop	A
Galtonia candicans	Summer	White		A
Gladiolus	May to Sept.	Various		A
Hyacinthus amethystinus	Early summer	Blue		A
Hyacinth	Spring	Various		
Iris (various)	Spring and summer	Various		A
Ixoilirion Montanum	May and June	Blue		
Leucojum æstivum	Early summer	White		B
vernum	Spring	White		BR
Lilium auratum	Aug.—Sept.	White and yellow		A
Browni	July	White and brown		
bulbiferum	Early summer	Crimson		
Canadense	Late summer	Orange or red		B
candidum	Summer	White	Madonna lily	A
Chalcedonicum	Summer	Scarlet	Scarlet Martagon lily	R
concolor	Early summer	Scarlet		
elegans	June—July	Orange red		

NAME	FLOWERING PERIOD	COLOUR	NOTES	
Lilium giganteum	July—Aug.	White		B
Hansoni	June	Yellow		
Humboldtii	July	Yellow		
Japonicum	July	White or pink		
longiflorum	June—July	White		
Martagon	July	Purple	St. Joseph's lily	A
monadelphum	Summer	Yellow		A
Parryi	July	Yellow		
pardalinum	August	Crimson		
pomponium	June	Scarlet		
speciosum	Summer and autumn	Rose or white		A
superbum	Late summer	Orange red	Swamp lily	B
testaceum	June and July	Apricot	Nankeen lily	
tigrinum	Aug.—Sept.	Deep orange	Tiger lily	A
Montbretia	August	Yellow or orange		
Muscari	March—May	Blue	Grape hyacinth	R
Narcissus (various)	Spring	Yellow to white	Daffodils	A
Ornithogalum	Spring	White	Star of Bethlehem	A
Puschkinia scilloides	April	White and blue	Lebanon squill	R
Scilla (various)	Early spring	Blue principally	Squill	A
Sternbergia	Autumn	Yellow	Best on limestone soil	
Tigridia Pavonia	July—Sept.	Scarlet		
Trillium	Spring	White or purple	Wood lily	BR
Triteleia uniflora	April	White		
Tulip (various)	Spring and summer	Various		A

PLANTS VALUED FOR THEIR FOLIAGE

The asterisk (*) indicates a plant needing protection in the winter. The colour given is that of the flowers.

NAME	HEIGHT	SITUATION	COLOUR
Acanthus mollis, var. *latifolius*	4 ft.	Sun	Purple
Ægopodium podograria var. *variegatum*	12–15 in.	Sun	Cream-white
Aira cærulea var. *variegata*	1–2½ ft.	Sun	Purple
Aralia Cachemfrica	5–8 ft.	Half-shade	White
cordata	4–6 ft	Half-shade	White
racemosa	3–4 ft.	Sun	Greenish white
Arrhenatherum bulbosum, var. *variegatum*	6–8 in.	Sun	Green
Artemisia Abrotanum	3–5ft.	Sun	White
Ludoviciana	2 ft.	Sun	Whitish
Pontica	1 ft.	Sun	Yellowish
Stelleriana	2 ft.	Sun	Yellow
Arundinaria Japonica	6–10 ft.	Half-shade*	Green
Simoni	10–20 ft.	Sun*	Green
Arundo Donax	10 ft.	Sun	Reddish
Beta Cicla	1–2 ft.	Sun (A)	
Bocconia microcarpa	9 ft.	Sun	Bronze
Caladium bicolor	1–2 ft.	Sun*	
Canna nigricans	4–6 ft.	Sun*	Red
Cannabis sativa	8–12 ft.	Sun (A)	
Carlina acaulis	4–8 in.	Sun	White
Carex Morrowi	10–12 in.	Sun	
tenaria	18–30 in.	Sun	
Dactylis glomerata, var. *variegata*	1½–2 ft.	Sun	Green
Elymus arenarius	2–5 ft.	Sun	Green
Erianthus Ravennæ	4–7 ft.	Sun	Greenish
Eulalia (*Miscanthus*) *Sinensis*	4–9 ft.	Sun	
Ferula communis		Sun	Yellow
Festuca glauca	18–20 in.	Sun or half-shade	
Funkia subcordata	12–20 in.	Half-shade	White
Gunnera manicata	5–8 ft	Sun*	Green
Gynerium argenteum	3–6 ft.	Sun*	

NAME	HEIGHT	SITUATION	COLOUR
Heracleum villosum	8–10 ft.	Sun	White
Phalaris arundinacea var. *variegata*	2–4 ft.	Sun	White
Phyllostachys aurea	10–15 ft.	Half-shade*	Brownish
nigra	10–20 ft.	Half-shade*	"
ruscifolia	1½–2 ft.	Half-shade*	Green
viridi-glaucescens	10–18 ft.	Half-shade*	Green
Rheum officinale	5–6 ft.	Sun	Greenish white
Palmatum	6–8 ft.	Sun	Greenish white
Ricinus communis	3–10 ft.	Sun (A)	
Rodgersia podophylla	3–4 ft.	Sun	White
Rohdea Japonica, var. *variegata*	9–12 in.	Half-shade	White
Santolina chamæcyparissus	1½–2 ft.	Sun*	Yellow
Scirpus Holoschœnus, var. *variegatus*	1–1½ ft.	Sun	Brown
Senecio Japonicus	4–8 ft	Sun	Orange
Stipa pennata	20 in.	Sun	Green
Symphytum officinale, var. *variegatum*	3–4 ft.	Sun or half-shade	Various
Tripsacum dactyloides	4–7 ft.	Sun*	Green
Tussilago Farfara		Sun	Yellow
Xanthorrhiza apiifolia	1–2 ft.	Shade	Purple
Yucca filamentosa	1–3 ft.	Sun	White

PLANTS FOR THE ALPINE GARDEN

NAME	HEIGHT IN INCHES	FLOWERING PERIOD	COLOUR
Acæna microphylla	3	June—Aug.	Inconspicuous
nermis			
Acantholimon glumaceum	6	July—Sept.	Rose

PLANTS FOR THE ALPINE GARDEN—*Continued*

NAME	HEIGHT IN INCHES	FLOWERING PERIOD	COLOUR
Achillea Herba-rota	6	May—July	White
rupestris			
tomentosa	9	June	Yellow
Actinella grandiflora	6–12	Summer	Yellow
Aconitum Lycactonum	20–36	June—Sept.	Yellow
Adonis vernalis	12	April	Yellow
Aethionema grandiflorum	12–18	Summer	Pink
Ajuga Genevensis	6–12	May	Blue
reptans, var. *rubra*	6	May—July	Blue
Alyssum argenteum	15	Summer	Yellow
saxatile	12	April—May	Yellow
serpyllifolium	4	Summer	Yellow
Androsace lanuginosa	6–10	April—May	Purple, yellow eye
sarmentosa	4	May—July	Pink, white eye
Anemone nemorosa	3–8	April	White
sylvestris	12–18	May—July	White
Anterunaria dioica	2–12	June	Rose
Anthemis nobilis	6	July—Oct.	White
Anthericum Liliastrum		April—July	White
Aquilegia Canadensis	12–24	May—July	Red
cærulea	12–18	April—July	Whitish blue
chrysantha	36–	May—Aug.	Yellow
vulgaris	18–24	June—Aug.	Violet
Arabis albida	6	April—June	White
Arenaria montana	5		White
verna	1–3		White
Armeria alpina	2–12	April—June	Rose
Asclepias tuberosa	24–30	August	Orange
Asperula odorata	6–8	May—July	White
Aster acris	24–30	Aug—Oct.	Lilac
alpinus	3–10	June	Purple
Astragalus alpinus	6–15		Violet
Astratia major	18	June	Pinkish
Aubretia deltoidea (varieties)	2–12	Spring	Violet
Bellis perennis	3–6	April—June	White, yellow

PLANTS FOR THE ALPINE GARDEN—*Continued*

NAME	HEIGHT IN INCHES	FLOWERING PERIOD	COLOUR
Bryanthus empetriformis	5–8		Rosy purple
Calandrina umbellata	4–6	June—Nov.	Crimson
Callirrhoe involucrata	9–12	April—Aug.	Purple
Campanula Carpatica	9–18	July	Blue, white
Garganica	3–6	July	Blue
glomerata	12–24	July—Aug.	Purple
rotundifolia and others	6–12	June—Aug.	Blue
Carlina acaulis	3–6	June—Nov.	White
Cerastium arvense	8–12	April—May	White
Biebersteinii	6	May—July	White
tomentosum	6	May—July	White
Cheiranthus Cheiri	12–30	Spring	Various
Chrysogonum Virginianum	12	Spring	Yellow
Clematis recta	24–36	June—Aug.	White
Conoclinium cœlestinum	12–24	Sept.—Oct.	Bluish
Cornus Canadensis	4–8	June	White
Corydalis lutea	6–8	April—Oct.	Yellow
nobilis	9	Spring	Yellow
Cyananthus lobatus	4	July—Sept.	Blue
Cytisus Schipkænsis		June—July	White
Daphne Cneorum	2–4	April—May	Pink
Delphinium elatum	24–40	June—July	Blue
Dianthus alpinus	3–4	Summer	Rose, purple
cæsius	8	June	Rose
deltoides	6–10	May—June	Red
glacialis	3–4	June	Deep rose
plumarius	12	May—June	Various
superbus	16–24	May—June	Lilac
Dicentra Canadensis	12–16	May	White
eximia	12	May—Sept.	Deep rose
Digitalis ambigua	20–30	July	Yellowish
Dodecatheon Meadia	9–20	Spring	Pink
Draba aizoides	3	April—May	Yellow
Epimedium alpinum	9	May—June	Crimson, yellow

PLANTS FOR THE ALPINE GARDEN — *Continued*

NAME	HEIGHT IN INCHES	FLOWERING PERIOD	COLOUR
Epimedium Musschianum	6	June	White
Erica carnea	6	Mar.—June	Red
Erigeron auranticus	12	June—Sept.	Orange
glaucus	12	May—June	Violet
Erinus alpinus	4	April—July	Purple
Erodium macradenium	6	June—Aug.	Violet
Manescovi	10–18	June—Aug.	Purple
Erysimum pumilum	3	Mar.—June	Yellow
Euphorbia polychroma			
Genista pilosa		May—June	Yellow
Gentiana acaulis	4	May	Blue
asclepiadea	4–6	July—Aug.	Blue
lutea	4–6	June—July	Yellow
Pnemonanthe	4–6	May—July	Blue
Geranium argenteum	3	June—Aug.	Pink
sanguineum, var. *Lancastriense*	18	June—Aug.	Red
Geum montanum	6	May—July	Yellow
reptans	6	May—July	Yellow
Globularia trichosantha	2	July—Aug.	Blue
Gypsophila cerastioides		June—July	White, red
Hedysarum neglectum	30	June—Aug.	Purple
Helianthemum Chamæcistus	12	July—Aug.	Various
Hepatica triloba	4–6	March	Various
Heriaria glabra	2	July—Aug.	Greenish
Heuchera sanguinea	12–18	June—Sept.	Red
Hieracium villosum	12–24	June—Aug.	Golden
Iberis Gibraltarica	12–20	June—Aug.	Pink
Inula ensifolia	6–8	July—Aug.	Yellow
Iris cristata	3	April—May	Blue
pumila	2–4	April—May	Various
tectorum	12	June—July	Blue, white
verna	6	April—June	Yellow
Leontopodium alpinum	4–12	June—Aug.	Yellow
Linaria alpina	6	June—Sept.	Purple, orange
Linum Cymbalaria	Trailing	All season	Violet
perenne	12–20	Summer	Blue

PLANTS FOR THE ALPINE GARDEN — *Continued*

NAME	HEIGHT IN INCHES	FLOWERING PERIOD	COLOUR
Lithospermum prostratum		May—July	Blue
Lobelia cardinalis	20–40		Red
syphilitica	20–30		Blue
Lychnis alpina	4	April—June	Rose
Majus pumilo	3	June	Violet
Mertensia pulmonarioides	12–20	May	Blue
Myosotis sylvatica, var. *alpestris*	3–8	Summer	Blue
palustris	6–18	May—June	Blue
Nierembergia rivularis	3	June—Sept.	Bluish white
Papaver alpinum	6–10	Summer	White
nudicaule	8–12	Summer	Various
Pentstemon glaber	9	June—July	Violet
Phlox subulata	4	April—May	Rose
Polemonium cæruleum	12–30	June—July	Blue
Polygonum affine	8	July—Oct.	Rose
Pulmonaria officinalis	6–12	April	Blue
Pyxidanthera barbulata	2–5	March—May	Pinkish white
Ramonda Pyrenaica	2–4	Spring	Purple
Ranunculus amplexicaulis	8	April—June	White and gold
Sabbatia lanceolata	12–30	May—Sept.	White
Sagino subulata	2–5	July—Sept.	White
Salvia pratensis	10–20	June—Aug.	Blue
Santolina Chamæcyparissus	18–24	Summer	Yellow
Saponaria ocymoides	6	All season	Rose
Saxifraga (various)	3–18	March—July	Various
Scabiosa graminifolia	12	June—Oct.	Blue
Sedum (various dwarfs)	2–20	Summer	Various
Sempervivum arachnoideum and many others	3–5	July	Red
Shortia galacifolia	3–8	May	White
Silene acaulis	2	May—Aug.	Pink
Pennsylvanica	6–9	April—May	Rose or white
Virginica	12–20	May—Sept.	Crimson
Spigelia Marilandica	12–20	May—July	Scarlet
Thalictrum aquilegifolium	12–30	May—July	White

PLANTS FOR THE ALPINE GARDEN — *Continued*

NAME	HEIGHT IN INCHES	FLOWERING PERIOD	COLOUR
Thymus Serpyllum (varieties)	3	June—Aug.	Lilac
Tiarella cordifolia	6–12	April—June	White
Tunica saxifraga	6–10	June—Aug.	Pink
Veronica (various)	2–18	May—Sept.	Various
Viola cornuta	5–8	Spring	Pale blue
Wahlenbergia grandiflora	3	June—Oct.	Blue
Zauschneria Californica	8–20	Aug.—Sept.	Vermilion

ALPINE FLOWERS FOR SIX MONTHS

FOR SUNNY LOCATIONS

BOTANICAL NAME	COMMON NAME	HEIGHT IN INCHES	COLOUR
FOR APRIL			
Adonis vernalis	Spring Adonis	10	Yellow
Alyssum saxatile, var. *compactum*	Golden tuft	12	Yellow
Aquilegia argenteum	Silver tuft	8–15	Yellow
Canadensis	Columbine	12–20	Red
Arabis albida	Rock cress	6	White
Cerastium tomentosum	Woolly-leaved chickweed	3	White
Iberis sempervirens	Candytuft	6–18	White
Myosotis palustris	Forget-me-not	8	Blue
Phlox subulata	Moss pink	4	Pink
Saxifraga crassifolia	Thick-leaved saxifrage	10–16	Pink
FOR MAY			
Ajuga reptans	Bugle weed	6–12	Blue
Armeria maritima	Sea pink	2–12	Pink
Leontopodium alpinum	Edelweiss	3–6	White
Heuchera sanguinea	Coral bells	12–18	Scarlet
Papaver nudicaule	Iceland poppy	8–12	Yellow
Phlox amœna	Purple moss pink	6	Purple
divaricata	Wild Sweet William	10–18	Blue

ALPINE FLOWERS FOR SIX MONTHS—*Continued*

BOTANICAL NAME	COMMON NAME	HEIGHT IN INCHES	COLOUR
Vinca minor	Periwinkle	2–6	Blue
Thymus Serphyllum	Mother of thyme	3	Pink
Ranunculus acris var. *flore-pleno*	Bachelor's button	6–12	Yellow
FOR JUNE			
Aster alpinus	Mountain aster	3–10	Blue
Callirrhoe involucrata	Poppy mallow	9–12	Magenta
Hieracium auranticum	Hawkweed	6–12	Red
Iris tectorum	Chinese dwarf iris	12	Lavender
Lotus corniculatus	Bird's foot trefoil	6–20	Yellow
Œnothera Missouriensis	Evening primrose	8–12	Yellow
Opuntia rafinesquii	Prickly pear	2–4	Yellow
Ruellia ciliosa	Hairy ruellia	12–18	Blue
Statice latifolia	Sea lavender	20	Lavender
Veronica incana, var. *candida*	Hoary speedwell	12–18	Blue
FOR JULY			
Achillea tomentosa	Downy milfoil	8–10	Yellow
Aster alpinus	Mountain aster	3–10	Blue
Brunella grandiflora	Self-heal	3–10	Blue
Campanula Carpatica	Carpathian bellflower	9–18	Blue
Pentstemon barbatus	Beard tongue	30	
Sedum album	Stone crop	4–6	White
sexangulare	Love entangled	6	Yellow
Hybridum	Hybrid stone crop	2–6	Yellow
Stachys lanata	Woolly woundwort	12–18	Pink
Thalictrum aquilegifolium	Feathered columbine	12–30	Pink
FOR AUGUST			
Coreopsis rosea	Red tickseed	12–20	Rose
Gaillardia aristata	Blanket flower	20–30	Bronze
Geranium sanguineum	Red cranesbill	18	Red
Pentstemon diffusus	Beard tongue	20	Blue
Sedum spectabilis	Showy sedum	18–20	Pink
Salvia azurea	Blue sage	12–40	Blue
Stokesia cyanea	Stokes' aster	12–20	Blue
Gypsophila paniculata	Baby's breath	20–30	White

ALPINE FLOWERS FOR SIX MONTHS—*Continued*

BOTANICAL NAME	COMMON NAME	HEIGHT IN INCHES	COLOUR
FOR SEPTEMBER			
Achillea millifolium, var. *roseum*	Yarrow	12–30	Rose
Anemone Japonica, var. *alba*	Japanese anemone	20–30	White
var. *elegantissima*	Japanese anemone		Rose
var. *Queen Charlotte*			Pink
Aster Novæ-Angliæ	Michaelmas daisy		Purple
var. *rosea*	Michaelmas daisy		Rose
Colchicum autumnale	Autumn crocus	3–4	Purple
Conoclinium cœlestinum	Mist flower	12–20	Blue
Ceatostigma plumbaginoides	Blue leadwort	6–12	Blue

ALPINES THAT THRIVE BEST IN SHADE OR HALF SHADE

HEIGHT IN INCHES	NAME	FLOWERING PERIOD	COLOUR	NOTES
10	*Adonis vernalis*	April—June	Yellow	
12	*amurensis*	Feb.—Mar.	Yellow	Fern-like foliage
6	*Ajuga Genevensis*	May	Blue	
4	*Androsace sarmentosa*	May—July	Rose	Hairy foliage
9	*Anemone palmata*	Mar.—June	Yellow	
6	*Anemone nemorosa*	Mar.—June	White	Wood anemone
3	*Asperula odorata*	May—July	White	
6	*Campanula Carpatica*, var. *pelviformis*	June—Sept.	Pale blue	
4	*Portenschlagiana*	May—June	Blue	
18	*Chamælirium pratensis*	April—July	White	
3	*Mitchella repens*	May—June	White	Red berries
—	Myosotis (various)			
3	*Nierembergia rivularis*	June—Sept.	Bluish white	
6	*Œnothera acaulis*	May—Aug.	White	
9	*cæspitosa*	May—July	White	
6	*pumila*	June—Aug.	Yellow	
4	*Omphalodes verna*	Mar.—May	Blue	
9	*Ourisia coccinea*	June—July	Scarlet	
6	*Oxalis rosea*	April—Sept.	Rose	
4	*Phlox subulata*, var. *Nelsoni*	April—May	White	
4	*procumbens*	April—May	Purple	

ALPINES THAT THRIVE BEST IN SHADE OR HALF SHADE—*Continued*

HEIGHT IN INCHES	NAME	FLOWERING PERIOD	COLOUR	NOTES
6	*Polygala paucifolia*	May—June	Purple	Evergreen
—	Primula (various)			
—	Pulmonaria (various)			
6	*Pyrola rotundifolia*	June—Aug.	White	
—	Ranunculus(various)			
9	*Rhexia Virginica*	July—Oct.	Rosy purple	
1	Sagina glabra	May	White	
—	Saxifraga (various)			
5	*Shortia galacifolia*	April—June	White	
3	*Soldanella alpina*	April—May	Violet	
9	*Convallaria majalis*	May—June	White	Lily-of-the-valley
6	*Cortusa pubens*	April—June	Light purple	
9	*Corydalis nobilis*	May—June	Yellow	
6	*bulbosa*	April—June	Purple	
6	*Cotula squalida*	July—Sept.	Purple	Fern-like foliage
4	*Dicentra cucullaria*	April—May	White and yellow	
36	*Digitalis ambigua*	June to Aug.	Yellow	
9	*Epimedium alpinum*	May—June	Crimson and yellow	
6	*Musschianum*	April—June	White	
3	*Erodium cicutarium*	June—Aug.	Pink	
9	*Galax aphylla*	Summer	White	Evergreen

ALPINES THAT THRIVE BEST IN SHADE OR HALF SHADE—*Continued*

HEIGHT IN INCHES	NAME	FLOWERING PERIOD	COLOUR	NOTES
2	*Gentiana Bavarica*	June—July	Blue	
9	*septemfida*	June—Sept.	Blue	
3	*verna*	April—June	Blue	
9	*Heuchera sanguinea*	June—Oct.	Scarlet	
12	*Hydrastis Canadensis*	April—June	Greenish white	
12	*Iris unguicularis*	March	Various	
3	*Linnæa borealis*	June—Aug.	Rose	
8	*Lithospermum prostratum*	May—July	Blue	Trailer
4	*Lloydia alpina*	June	White	Veined green
12	*Tricyrtes hirta* var. *nigra*	Aug.—Nov.	Pinkish	
12	*Trillium undulatium*	April—June	White	Blotched crimson
—	Violet (various)			

HARDY PLANTS FOR SHADY PLACES

BOTANICAL NAME	COMMON NAME	FLOWERING SEASON	HEIGHT IN INCHES	COLOUR
Hepatica triloba	Hepatica	March		Various
Anemone coronaria, var. *St. Brigid*	Anemone St. Brigid	April	6–12	Various
Pulsatilla	Pasque flower	April	9–12	Blue
sylvestris	Wood anemone	April	12–18	White
Dodecatheon Meadia	Shooting star	April	3–9	Pink
Iris verna	Dwarf early flag	April	6	Blue
Mertensia pulmonarioide	Bluebells	April	12–18	Blue
Polygonatum biflorum	Solomon's seal	April—May	8–30	Greenish
Convallaria majalis	Lily-of-the-valley	May	6–8	White
Geranium maculatum	Spotted cranesbill	May	10–18	Pink
pratense	Meadow cranesbill	May	2–4	Purple
Maianthemum Canadense	False lily-of-the-valley	May	3–5	White
Phlox divaricata	Wild blue phlox	May	10–18	Blue
Polemonium reptans	Jacob's ladder	May	6–12	Blue
Astilbe Japonica, var. *compactum* (Spirea)	False goat's beard	May	12–20	White
Heuchera Americana	Alum root	May—June	20–30	White
Oxalis violacea	Violet wood sorrel	May—June	8—16	Rose purple
Smilacina racemosa	Wild spikenard	May—June	12–30	White
Actæa spicata	Cohosh	June	12–20	White

BOTANICAL NAME	COMMON NAME	FLOWERING SEASON	HEIGHT IN INCHES	COLOUR
Digitalis ambigua	Perennial foxglove	June	20–30	Yellow
purpurea	Foxglove	June	20–30	Purple
Oxalis Acetosella	Wood sorrel	June	2–6	White
Pachysandra procumbens	Mountain spurge	June	6–12	Maroon
Viola cornuta	Horned violet	June	5–8	White
Funkia cordifolia	Plantain lily	July		Purple
subcordata	White plantain lily	July	12–20	White
lancifolia		July	6	Blue
var. *undulata*		July	6	Variegated
Tricyrtis hirta, var. *nigra*	Toad lily	July	12–30	Brownish

FERNS FOR THE ALPINE GARDEN

Of the fifty odd kinds offered by nurserymen, the following are especially useful, being but a foot or less in height.

Asplenium Trichomanes	Maidenhair spleenwort
Botrychium lunaria	Moonwort
Camptosorus rhizophyllus	Walking fern
Cheilanthes lanosa	Hairy lip fern
Cystopteris bulbifera	Bulblet fern
fragilis	Brittle fern
Ophioglossum vulgatum	Adder's tongue
Pælla atropurpurea	Purple stemmed cliff break
Phegopteris Dryopteris	Oakfern
hexagonoptera	Broadbuck fern
polypodioides	Long beech fern
Polypodium vulgare	Common polypody
Scolopendrium vulgare	Hart's tongue fern
Woodsia Ilvensis	Rusty woodsia

ANNUALS FOR SPECIAL PURPOSES

FOR CUT FLOWERS

COMMON NAME	SCIENTIFIC NAME	HEIGHT (inches)	DURATION OF BLOOM (weeks)
BLUE			
Ageratum	*Ageratum conyzoides*	10	All summer
Giant comet aster	*Callistephus hortensis*	15	Four
Victoria aster	*Callistephus hortensis*	18	Four
Jubilee aster	*Callistephus hortensis*	24	Four
Cornflower	*Centaurea Cyanus*	24	Till frost
Navy Blue sweet pea	*Lathyrus odoratus*	60	Eight
Dwarf lobelia	*Lobelia Erinus*	6	All summer
YELLOW			
Giant-flowering snapdragon	*Antirrhinum majus*	24	Eight
Klondyke cosmos	*Cosmos sulphureus*	48	Six
Stella sunflower	*Helianthus debilis*, var. *Stella*	36	Ten

ANNUALS FOR SPECIAL PURPOSES — *Continued*

COMMON NAME	SCIENTIFIC NAME	HEIGHT (inches)	DURATION OF BLOOM (weeks)
YELLOW			
African marigold	*Tagetes erecta*	24	Twelve
Tom Thumb nasturtium	*Tropæolum minus*	12	Twelve
Double mammoth zinnia	*Zinnia elegans*	24	Fifteen
PINK			
Victoria aster	*Callistephus hortensis*	18	Four
Branching aster	*Callistephus hortensis*	24	Four
Jubilee aster	*Callistephus hortensis*	24	Four
Clarkia	*Clarkia elegans*	18	Six
La Malmaison balsam	*Impatiens Balsamina*	20	Eight
Blanche Ferry sweet pea	*Lathyrus odoratus*	48	Eight
Sander's tobacco	*Nicotiana Sanderæ*	30	Eight
Drummond's phlox	*Phlox Drummondii*	18	Twelve
Mammoth verbena	*Verbena hybrida*	12	Ten
WHITE			
Giant-flowering snapdragon	*Antirrhinum majus*	24	Eight
White Bentley aster	*Callistephus hortensis*	24	Four
Annual chrysanthemum	*Chrysanthemum coronarium*	18	Twelve
Giant-flowering cosmos	*Cosmos bipinnatus*	48	Six
Baby's breath	*Gypsophila paniculata*	12	Twelve
Emily Henderson sweet pea	*Lathyrus odoratus*	60	Six
Ten weeks stock	*Matthiola incana*, var. *annua*	15	Ten
White swan poppy	*Papaver somniferum*	24	Five
RED AND SCARLET			
Giant aster	*Callistephus hortensis*	24	Four
Jubilee aster	*Callisephus hortensis*	24	Four
Victoria aster	*Callistephus hortensis*	18	Four
Giant-flowering cosmos	*Cosmos bipinnatus*	48	Six
Salopian sweet pea	*Lathryus odoratus*	60	Eight
Ten weeks stock	*Matthiola incana* var. *annua*	15	Ten

ANNUALS FOR SPECIAL PURPOSES — *Continued*

COMMON NAME	SCIENTIFIC NAME	HEIGHT (inches)	DURATION OF BLOOM (weeks)
Bonfire salvia	*Salvia splendens*	24	Twelve
LILAC AND PURPLE			
Peony-flowered aster	*Callistephus hortensis*	24	Four
Late-branching aster	*Callistephus hortensis*	24	Four
Victoria aster	*Callistephus hortensis*	18	Four
Double purple balsam	*Impatiens Balsamina*	20	Eight
Ten weeks stock	*Matthiola incana*, var. *annua*	15	Ten
Giant bluebird petunia	*Petunia hybrida*	18	Ten
Carnation-flowered poppy	*Papaver somniferum*, var. *fimbriatum*	24	Five
Peony-flowered poppy	*Papaver somniferum*, var. *pæoniæflorum*	24	Five
Mammoth verbena	*Verbena hybrida*	12	Ten
FOR MASS EFFECTS			
BLUE			
Tom Thumb ageratum	*Ageratum conyzoides*	6	All summer
Amethyst	*Browallia demissa* (*B. elata*)	18	All summer
Slender lobelia	*Lobelia Erinus*, var. *gracilis*	9	All summer
Crystal Palace lobelia	*Lobelia Erinus*, var. *compacta*	6	All summer
YELLOW			
Double sulphur rose moss	*Portulaca grandiflora*	6	Twelve
African marigold	*Tagetes erecta*	24	Twelve
Dwarf nasturtium	*Tropæolum minus*	12	Twelve
Double mammoth zinnia	*Zinnia elegans*	20	Fifteen
RED AND SCARLET			
Love-lies-bleeding	*Amaranthus caudatus*	30	Ten
Giant snapdragon	*Antirrhinum majus*	30	Eight
Globe amaranth	*Gomphrina globosa*	18	Ten

ANNUALS FOR SPECIAL PURPOSES — *Continued*

COMMON NAME	SCIENTIFIC NAME	HEIGHT (inches)	DURATION OF BLOOM (weeks)
Double rose moss	*Portulaca grandiflora*	6	Twelve
Bonfire salvia	*Salvia splendens*	18	Twelve
Mammoth zinnia	*Zinnia elegans*	20	Fifteen
WHITE			
Sweet alyssum	*Alyssum maritimum*	12	Twenty
Candytuft	*Iberis amara*	12	Four
Rose moss	*Portulaca grandiflora*	6	Twelve
Madagascar periwinkle	*Vinca rosea*, var. *alba*	15	Twelve
ROSE AND PINK			
Sander's tobacco	*Nicotiana Sanderæ*	24	Eight
Annual phlox	*Phlox Drummondii*	18	Twelve
Madagascar periwinkle	*Vinca rosea*	12	Twelve
LILAC AND PURPLE			
Double purple balsam	*Impatiens Balsamina*	20	Eight
Bluebird petunia	*Petunia hybrida*	12	Ten
Mammoth purple verbena	*Verbena hybrida*	12	Ten
FOR EDGINGS			
WHITE			
Tom Thumb alyssum	*Alyssum maritimum*	6	Twenty
Browallia	*Browallia demissa* (*B. elata*)	12	All summer
Little Prince candytuft	*Iberis amara*	6	Four
The Bride torenia	*Torenia Fournieri*, var. *alba*	9	All summer
Madagascar periwinkle	*Vinca rosea*, var. *alba*	12	Twelve
RED AND SCARLET			
Dwarf snapdragon	*Antirrhinum majus*	6	Eight
Drummond's phlox	*Phlox Drummondii*	15	Twelve
Double scarlet rose moss	*Portulaca grandiflora*	6	Twelve
Mammoth verbena	*Verbena hybrida*	12	Ten
BLUE			
Blue Star ageratum	*Ageratum conyzoides*	6	All summer

ANNUALS FOR SPECIAL PURPOSES — *Continued*

COMMON NAME	SCIENTIFIC NAME	HEIGHT (inches)	DURATION OF BLOOM (weeks)
Browallia	*Browallia demissa* (*B. elata*)	12	Eight
Crystal Palace lobelia	*Lobelia Erinus*, var. *compacta*	6	All summer
PINK AND ROSE			
Sander's tobacco	*Nicotiana Sanderæ*	24	Eight
Double rose moss	*Portulaca grandiflora*	6	Twelve
Mammoth verbena	*Verbena hybrida*	12	Ten
Madagascar periwinkle	*Vinca rosea*	12	Twelve
YELLOW			
Dwarf snapdragon	*Antirrhinum majus*	6	Eight
California poppy	*Eschscholzia Californica*	12	Three
Double rose moss	*Portulaca grandiflora*	6	Twelve
French marigold	*Tagetes patula*	12	Eight
Golden gate nasturtium	*Tropæolum minus*	12	Twelve
LILAC AND PURPLE			
Bluebird petunia	*Petunia hybrida*	12	Ten
Mammoth verbena	*Verbena hybrida*	6	Ten

FOR COVERING ROUGH GROUND

WHITE			
Tom Thumb alyssum	*Alyssum maritimum*	6	Twenty
Browallia	*Browallia demissa*, var. *alba* (*B. elata*)	9	Eight
Little Prince candytuft	*Iberis amara*	6	Four
Moonflower	*Ipomœa Bona-nox*	180	Ten
Double rose moss	*Portulaca grandiflora*	6	Twelve
Catch fly	*Silene pendula*, var. *compacta*	6	
RED AND SCARLET			
Corn poppy	*Papaver Rhœas*	12	Five
Double rose moss	*Portulaca grandiflora*	6	Twelve
Bonfire salvia	*Salvia splendens*	15	Twelve
Othello nasturtium	*Tropœolum minus*	8	Twelve
Mammoth verbena	*Verbena hybrida*	12	Ten

FOR COVERING ROUGH GROUND -- *Continued*

COMMON NAME	SCIENTIFIC NAME	HEIGHT (inches)	DURATION OF BLOOM (weeks)
BLUE			
Perfection ageratum	*Ageratum conyzoides*	8	All summer
Browallia	*Browallia demissa*	9	Eight
Slender lobelia	*Lobelia Erinus*, var. *gracilis*	9	All summer
PINK AND ROSE			
Annual gypsophila	*Gypsophila elegans*	18	Ten
Shirley poppy	*Papaver Rhœas*, var. *Shirley*	15	Four
Drummond's phlox	*Phlox Drummondii*	15	Ten
Double rose moss	*Portulaca grandiflora*	6	Twelve
Mammoth verbena	*Verbena hybrida*	12	Ten
YELLOW			
Golden wave calliopsis	*Coreopsis Drummondii*	18	Twelve
California poppy	*Eschscholzia Californica*	12	Four
Double rose moss	*Portulaca grandiflora*	6	Twelve
Tom Thumb nasturtium	*Tropœolum minus*	12	Twelve
LILAC AND PURPLE			
Giant admiration petunia	*Petunia hybrida*	12	Ten
Mammoth verbena	*Verbena hybrida*	12	Ten

ANNUAL VINES FOR VERANDAS AND ARBOURS

COMMON NAME	SCIENTIFIC NAME	HEIGHT (feet)	DURATION OF BLOOM (weeks)
WHITE			
Cobœa	*Cobœa scandens*, var. *alba*	30	Eight
Moonflower	*Ipomœa Bona-nox*	30	Ten
BLUE			
Cobœa	*Cobœa scandens*	30	Eight

ANNUAL VINES FOR VERANDAS AND ARBOURS — *Continued*

COMMON NAME	SCIENTIFIC NAME	HEIGHT (feet)	DURATION OF BLOOM (weeks)
MIXED COLOURS			
Morning glory	*Convolvulus tricolor*	20	Ten
Japanese hop	*Humulus Japonicus*	30	For foliage
Hyacinth bean	*Dolichos Lablab*	10	Ten
Cypress vine	*Ipomœa Quamoclit*	20	Ten
Gourds	*Luffa Ægyptiaca*	20	Eight
Nasturtiums	*Tropœolum majus*	10	Ten
Canary-bird vine	*Tropœolum peregrinum*	8	Ten

ANNUAL PLANTS THAT BLOOM AFTER FROST

Abronia umbrellata

Adonis æstivalis, and *autumnale*

Argemone grandiflora

Calendulas

Callirrhoë

Carduus benedictus

Centaurea Cyanis

Centauridium

Centranthus macrosiphon

Cerinthe retorta

Cheiranthus Cheiri

Chrysanthemums

Convolvulus minor, and *tricolor*

Dianthus

Elsholtzia Cristata

Erysimum Perofskianum, and *Arkansanum*

Eschscholzias

Gaillardia picta

Gilia achilleæfolia, capetata, laciniata, and tricolor

Iberis affinis

Lavetera alba

Stocks

Œnothera rosea, and *Lamarckiana*

Phlox Drummondii

Podolepis affinis and *chrysantha*

Salvia coccinea and *farinacea, Horminum*

Verbenas

Vicia Gerardi

Virginian stocks

Lychnis Viscaria var. *elegans* and *Cœli-rosa* var. *oculata*

NAME	FLOWERING PERIOD	COLOUR	NOTES
Abelia rupestris	Early autumn	Pink	Requires light soil
Actinidia arguta	June	White	Edible fruit
polygama	July	White	Attracts cats
**Adlumia cirrhosa*	All summer	White	Flowers first season
Akebia quinata	May	Purple and brown	Small leaves thickly produced
Aristolochia macrophylla	Summer	Red	Large leaves. Odd pods
Berchemia racemosa	July	Greenish-white	Half hardy. Red berries
Celastrus scandens	June	White	Ornamental fruit
orbiculatus	June--July	White	Smaller vine and foliage
Clematis	May—Oct	Various	Many species and varieties
Convolvulus villosus	Summer	White	Spreads rapidly. Plant these with plenty of room
Japonicus	Summer	Pink	
occidentalis	Summer	White and pink	Fine for rockeries
Sepium	Summer	White and pink	Likely to become weedy
Dioscorea villosa	Summer	Greenish white	Useful also in borders
Epigæa repens	May—June	White and rose	Ground cover for shady spots
Forsythia suspensa	April—May	Yellow	Give support. Prune lightly
var. *Fortunei*	April—May	Yellow	More vigorous
Humulus Lupulus	July—Aug.	Yellow	All features attractive
Jasminum nudiflorum	Summer	White	Needs support. Protect
officinale	Summer	White	Needs even more protection

[The asterisk (*) indicates a biennial vine.]

HARDY PERENNIAL CLIMBING PLANTS WITH CONSPICUOUS FLOWERS—*Continued*

NAME	FLOWERING PERIOD	COLOUR	NOTES
Lathyrus latifolius	June—frost	Rose	Several fine varieties
Lonicera Japonica	June—Aug.	White and yellow	Many hybrid varieties
Periclymenum	June—Sept.	White and yellow	Well-known woodbines
sempervirens	May—Sept.	Orange-scarlet	Evergreen in South
Lycium Chilense	July	Purple	Foliage "frosty"
Menispermum Canadense	June—July	Greenish white	Blue-black fruit
Periploca Græca	July—Aug.	Purple	Protect North of New York
Piper Futokadsura	Summer	Greenish white	Slightly tender
Polygonum Baldschuanicum	Summer	Rose	Rare in America
Rosa multiflora	June—July	Red	"Ramblers." Many varieties
setigera	June—July	Rose	Needs support. Good cover plant
Wichuraiana	July—Sept.	White	Fine for banks and rockeries
Banksiæ	May—June	Yellow	Will grow 20 feet high
Schizophragma hydrangeoides	July	White	Prefers shade. Covers tree trunks
Tecoma radicans	July—Sept.	Orange-red	Very beautiful. "Trumpet vine"
grandiflora	Aug.—Sept.	Orange-red	Has better flowers
Vinca minor	May—July	Blue or white	Ground cover for shade
Vitis Labrusca	Spring	Colourless	Fruit attractive
Wistaria Chinensis	May	White and blue	The best of three species

NAME	SEASON	COLOUR	NOTES
Apios tuberosa	July—Aug.	Brown	Lift tubers in fall
Boussingaultia basselloides	Summer—frost	White	Lift tubers in fall
Bryonopsis laciniosa	Summer	Yellow	Attractive fruit
Cardiospermum Hallicacabum	Summer	White	Balloon-shaped pods
Cobœa scandens	Summer	Purple	Rapid grower
Coccinea cordifolia	Summer—frost	White	Scarlet, gourd-like fruit
Convolvulus tricolor	Summer	Various	Fine for border
Cucurbita maxima, var. *ovifera*	Summer	Yellow	Grown for odd fruit
Dolichos Lablab	Summer	Purple	Any soil. Pea-like blossoms
Ecballium Elaterium			Odd explosive fruit
Eccremocarpus scaber	July—Aug.	White	Perennial in South
Humulus Japonicus	July—Aug.	Yellowish-white	Good variegated form
Ipomœa Quamoclit	July—frost	Scarlet	The "Cypress-vine"
purpurea	July—frost	All colours	Seed may be saved for next year
Lathyrus odoratus	June—frost	All colours	Plant early. The finest cut flowers
Maurandia scandens	Summer	Varied	Shrub in the South
Momordica Charantia	Summer	Yellow	Two good species
Phaseolus multiflorus	Summer	Scarlet	Fine quick grower
Rhodochiton volubile	Summer	Red	Perennial in South
Thunbergia alata	Summer	Mixed	Perennial in South
Tropæolum perigrinum	Summer	Yellow	Quick grower. Small flowers
majus	Summer	Mixed	Both climbing and dwarf forms

CLIMBING PLANTS FOR FOLIAGE EFFECT

NAME	HEIGHT IN FEET	NOTES
Ampelopsis quinquefolia	50	The attractive Virginia creeper
tricuspidata	100	Boston ivy. Fine for brick walls and cities
meterophylla	20	Bright blue berries in fall
Dioscorea alata	6	Lift tubers in fall and store
divaricata	8	With protection, tubers live over winter
Euonymus radicans	20	Hardier than ivy. Several varieties
Hedera Helix	100	Ever useful English ivy. Many varieties
Mitchella repens	½	Fine ground cover for shady places
Pueraria Thunbergiana	60	Roots hardy. New top growth annually if killed back

TREES FOR THE LAWN

NAME	DECIDUOUS OR EVERGREEN	NOTES
American elm (*Ulmus Americana*)	D	Easily transplanted, but needs plenty of space. Suited to many soils
European silver linden (*Tilia Europa*, var. *argentea*)	D	Easily transplanted. Grows large with branches close to ground
Oriental plane tree (*Platanus orientalis*)	D	Blends with other trees. Ordinary soil. A wide spread of sturdy limbs
Norway maple (*Acer platanoides*)	D	Round, massive head. Beautiful in spring. Easily transplanted in ordinary soil.

NAME	DECIDUOUS OR EVERGREEN	NOTES
Schwedler's maple (*A. platanoides*, var. *Schwedlerii*)	D	Similar, but leaves change from purplish in spring to bronze in fall
European copper beech (*Fagus sylvatica*, var. *purpurea*)	D	Hard to transplant. Beautiful in form, bark and foliage. Long lived
Red oak (*Quercus rubra*)	D	Hard to transplant, but broad spreading, rugged and beautiful in fall
European white birch (*Betula alba*)	D	Graceful. Plant in early spring against evergreens or in shrubbery
Tulip tree (*Liriodendron tulipifera*)	D	Plant as small tree in early spring. Quickly attains great size
Kentucky coffee tree (*Gymnocladus dioica*)	D	Any soil but plenty of light. Effective winter and summer
Ginkgo tree (*Ginkgo biloba*)	D	Dainty foliage and branching are attractive. Beautiful in fall
Oriental spruce (*Picea orientalis*)	E	Hard to transplant except when young. Give much care
Austrian pine (*Pinus Austriaca*)	E	Needs only fair soil. Very hardy and of handsome form
Bhotan pine (*Pinus excelsa*)	E	Needs better soil. Plant young trees in spring, protecting roots at all times
White pine (*Pinus Strobus*)	E	Prefers sandy soil. Plant in spring, protect from severe sun and wind
Hemlock (*Tsuga Canadensis*)	E	Use for background. Protect roots in transplanting. Graceful form

EVERGREEN SHRUBS

NAME	HEIGHT IN FEET	NOTES
Andromeda polifolia	½–2	Protect from winter sun. White or pink flowers in June. Many forms
Berberis Aquifolium, Mahonia	2–4	Glossy, dark foliage. Yellow flowers, purple berries. Protect in exposed place
Buxus sempervirens, Box	25	Thick, small foliage. Prefers sheltered position. Stands severe pruning
Var. *microphylla*, Dwarf box	½–1	Best form for edging flower beds
Ilex opaca, American holly	40	Less handsome but more hardy than English holly. Stands pruning
Juniperus communis, Juniper	2–10	Sometimes a tree. Several varieties and species in different forms
Kalmia latifolia, Mountain laurel	4–10	Large pink flowers, May and June. *K. angustifolia* smaller in every way
Retinospora sp., Japanese arborvitae	3–6	Sometimes given as varieties of Thuja. Thick, compact bushes
Rhododendron Catawbiense	3–10	Large, dark green, glossy leaves. Terminal flowers in May or June white to purple
Thuja occidentalis, arborvitæ	6–60	Becomes a tree, but can be clipped to hedge or specimen forms

COMMON NAME	BOTANICAL NAME	COL.	CHARACTER OF FLOWER	H'G'T FEET	HABIT	NOTES
MARCH						
Weeping filbert	*Corylus Avellana*, var. *pendula*		Drooping Catkins	5–10	Weeping	Almost any soil. Several other good varieties
Japanese pussy	*Salix multinervis*		Catkins	4	Drooping	Grows well in wet places
Bush honeysuckle	*Lonicera Standishi*	W	Single	3–6	Spreading	Half-evergreen. Needs shelter in North
Hall's magnolia (2)	*Magnolia stellata*	W.	Single	5–10	Spreading	Plant against background. Large flowers
Spice bush	*Benzoin oderiferum*	Y.	Rosettes	6–15	Upright	Aromatic. Red fruit in fall. Earliest flowers
Cornelian cherry	*Cornus Mas.*	Y.	Small	6–20	Dense	Sun or shade. Fruit and flowers handsome
Leatherwood	*Dirca palustris*	Y.	Single	2–6	Branchy	Hardy. Wants moist loam. Flowers before leaves
Fragrant sumach	*Rhus Canadensis*	Y.	Spike	3–8	Spreading	Fine cover plant. Brilliant in fall
Flowering almond	*Prunus Japonica* (*nana*)	Pi.	Single	2–5	Bushy	Hardy. Double flowers, with leaves
Japan quince (2)	*Cydonia Japonica*	R.	Single	3–6	Dense	Fine for hedges. Odd fruit. Other varieties
Daphne	*Daphne Mezereum*	Pu.	3-flowered	4	Erect	Give some shade and light, well-drained soil
APRIL						
Dwarf Juneberry (2)	*Amelanchier Botryapium*	W.	Short, loose	4–6	Tree form	Profuse flowers. Dark red berries edible
Leather leaf*	*Chamædaphne calyculata*	W.	Long, thin	1–3	Spreading	Hardy, spreading evergreen. Moist or peat soil

Colour symbols: W, white, Y, yellow; Pi, pink; R, red; Pu, purple; B, blue. The figure (2) after the common name indicates that the plant belongs rather to the second half of the month. The asterisk (*) marks the evergreen species.

SHRUBS FOR FLOWER EFFECTS THE ENTIRE SEASON—*Continued.*

COMMON NAME	BOTANICAL NAME	COL.	CHARACTER OF FLOWER	H'G'T FEET	HABIT	NOTES
Japan oleaster or "Goumi" (2)	*Eleagnus longipes*	W.	Single	3–6	Erect	Edible fruit. A silver variety attractive
Pearl bush (2)	*Exochorda grandiflora*	W.	Long plumes	6–8	Open	Brilliant flower effect. Ugly, thin foliage
Swamp leucothoë	*Leucothoë racemosa*	W.	Short, erect	5–10	Erect	Hardy. Prefers moisture and some shade
Siberian crab	*Pyrus baccata* (*Malus baccata*)	W.	Short, few fl'd.	6–8	Tree form	Attractive in various forms, all hardy
American bladder nut	*Staphylea trifolia*	W.	Loose, nodding	6–12	Upright	Odd inflated pods. Plant in mass
(2) Chinese (or Japanese) azalea (2)	*Azalea Sinensis* (*mollis*)	Y.	Loose, erect	3–8	Erect	Showy. Ranges to deep orange. Large blooms
Barberry (2)	*Berberis Thunbergii*	Y.	Single	2–4	Dense	Hardy, for low hedges. Berries all winter
Golden bell	*Forsythia suspensa*	Y.	Single	5–8	Weeping	Hardy, free from pests. Abundant flowers
Garland flower* (2)	*Daphne Cneorum*	P.	Thick heads	½–2	Trailing	Evergreen trailer. May bloom again in July
Sand myrtle* (2)	*Leiophyllum buxifolium*	Pi.	Flat head	1–3	Dense	Blooms till July, sun or shade. Like box
Stagger bush	*Pieris Mariana*	Pi.	Nodding, slim	2-4	Arching	Graceful in flowers and foliage. Other varieties
Red chokeberry (2)	*Sorbus arbutifolia*	R	Small	6–12	Upright	Good for borders, in moist soil. Two forms
Hardy evergreen azalea*	*Azalea Indica*, var. *amœna*	Pu.	Variable	1–	Erect	Several varieties in red and purple

Colour symbols: W, white; Y, yellow; Pi, pink; R. red; Pu, purple; B, blue. The figure (2) after the common name indicates that the plant belongs rather to the second half of the month. The asterisk (*) marks the evergreen species.

COMMON NAME	BOTANICAL NAME	COL.	CHARACTER OF FLOWER	H'G'T FEET	HABIT	NOTES
Lilac (2)	*Syringa oblata*	Pu.	Large	5–12	Bushy	Earliest flowering of many species
Yellow root or brook feather	*Xanthorrhiza apiifolia*	Pu.	Drooping	1–15	Shrubby	Yellow wood. Wants moisture and shade
MAY						
Ghent azalea	*Azalea Gandavensis*	W.	Loose	2–4	Erect	Many hybrid varieties, blooming till July
Red-osier dogwood	*Cornus stolonifera*	W.	Dense, small	4–8	Erect	Both red and yellow barked vars.
Chinese cotoneaster	*Cotoneaster multiflora*	W.	Small cymes	3–6	Arching	Needs sun and drainage. Also an evergreen variety
Japanese snow flower	*Deutzia gracilis*	W.	Ragged	1–3	Arching	For borders. *D. Lemoinei* more hardy
Snowdrop tree or silver bell (2)	*Halesia tetraptera*	W.	2-or 3-flowered	5–10	Bushy	May be trained as bush or tree
Mountain laurel* (2)	*Kalmia latifolia*	W.	Thick	4–10	Erect	Give moisture or shade. Plant in fall
Japanese bush honeysuckle (2)	*Lonicera Morrowi*	W.	2-flowered	3–6	Spreading	This with red, another form with yellow fruit
Mock orange (2)	*Philadelphus coronarius*	W.	Small	5–10	Upright	Two hybrids are lower and more effective
Beach plum	*Prunus maritimus*	W.	Single	3–8	Spreading	Any soil. Edible fruit. Black knot common
Evergreen thorn*	*Pyracantha coccinea*	W.	Flattish	3–6	Stiff	Red fruit all winter. Prefers sunny place
White kerria	*Rhodotypos kerrioides*	W.	Single	3–6	Branching	Any good soil. Black fruit all winter

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SHRUBS FOR FLOWER EFFECTS THE ENTIRE SEASON—*Continued.*

COMMON NAME	BOTANICAL NAME	COL.	CHARACTER OF FLOWER	H'G'T FEET	HABIT	NOTES
Rose	*Rosa rugosa*	W.	Single	3–6	Dense	Very hardy, thorny. One of the best roses
Spirea	*Spirea arguta*	W.	Flat masses	3–6	Arching	Five other good species. This earliest
Japanese snowball	*Viburnum tomentosum*, var. *plicatum*	W.	Spherical	3–8	Spreading	Less attacked by aphis than the old forms
Xanthoceras	*Xanthoceras sorbifolia*	W.	Thick spikes	5–12	Upright	Ornamental flowers and foliage Any soil
Barberry	*Berberis vulgaris*	Y.	Slender	3–5	Spreading	For mass or single planting. Hardy, bushy
Siberian pea tree	*Caragana frutescens*	Y.	Single	6–10	Erect	Prefers sandy, sunny place. Several species
Scotch broom	*Cytisus Scoparius*	Y.	Single	3–30	Erect	Roots hardy. For covering bare ground
Strawberry bush	*Euonymus alatus*	Y.	Small, few fl'd	3–8	Spreading	*E. radicans* a climbing evergreen. Any soil
Sea buckthorn	*Hippophoë rhamnoides*	Y	2- or 3-flowered	2–6	Low,straggling	Fine for seashore. Mix sexes for fruit
Golden chain	*Laburnum vulgare*	Y.	Wistaria-like	6–15	Erect	Give plenty of space in sun or shade
Buffalo currant	*Ribes aureum*	Y.	Thin, small	3–6	Bushy	Hardy and vigorous everywhere. Blue berries
Buffalo berry	*Shepherdia argentea*	Y.	Dense, small	6–15	Upright	Silvery foliage and yellow fruit
Japan Judas tree (Japonica)	*Cercis Chinensis*	Pi.	Thin, small	3–10	Tree form	Tree by nature. *C. Canadensis* more hardy

Colour symbols: W, white; Y, yellow; Pi, pink; R, red; Pu, purple; B, blue. The figure (2) after the common name indicates that the plant belongs rather to the second half of the month. The asterisk (*) marks the evergreen species.

COMMON NAME	BOTANICAL NAME	COL.	CHARACTER OF FLOWER	H'G'T FEET	HABIT	NOTES
Weigela	*Diervilla florida*	Pi.	Few-flowered	3–6	Arching	Shade and moisture desired. White to deep red
Rhododendron*	*Rhododendron Californicum*	Pi.	Large	5–8	Bushy	An early species. Fine around large trees
Rose acacia	*Robinia hispida*	Pi.	Loose, erect	2–8	Spreading	Keep away from other plants. Borers bother
Himalayan lilac (2)	*Syringa villosa*	Pi.	Large, dense	4–8	Bushy	Cut blossoms as soon as faded Many species
Tamarisk	*Tamarix parviflora*	Pi.	Many small spikes	6–15	Erect	Will stand salt spray. Very graceful habit
Tree peony (2)	*Pæonia Moutan*	R.	Single	3–6	Branching	The only peony shrub. Give deep rich soil
Common lilac (2)	*Syringa vulgaris*	Pu.	Large, dense	5–10	Branching	Hardy, grows anywhere. Many varieties
JUNE						
Wild rosemary*	*Andromeda polifolia*	W.	Single	½–2	Low, spreading	Best with rhododendrons and azaleas
European Juneberry	*Amelanicher vulgaris*	W.	Short	2–4	Upright	Dwarf. Very showy flowers and later berries
White azalea	*Azalea viscosa*	W.	Variable	4–8	Branching	Several varieties for other colour effects
Deutzia	*Deutzia Lemoinei*	W.	Large, broad	1–3	Spreading	Very hardy. Fine to follow *D. gracilis*
Hydrangea	*Hydrangea radiata*	W.	Globular	4–10	Erect	Wants rich, moist, sunny location

Colour symbols: W, white; Y, yellow; Pi, pink; R, red; Pu, purple; B. blue. The figure (2) after the common name indicates that the plant belongs rather to the second half of this month. The asterisk (*) marks the evergreen species.

SHRUBS FOR FLOWER EFFECTS THE ENTIRE SEASON—*Continued.*

COMMON NAME	BOTANICAL NAME	COL.	CHARACTER OF FLOWER	H'G'T FEET	HABIT	NOTES
Regel's privet	*Ligustrum Ibota*, var. *Regelianum*	W.	Drooping	4–8	Dense	Better for flowers than hedges. Low, dense
Pernettya*	*Pernettya mucronata*	W.	Single	2–2½	Branching	White to purple berries. Likes sunlight
Ninebark spirea	*Physocarpus opulitolius*	W.	Thick, round	4–10	Spreading	Easily grown. Attractive seed pods
Rose bay*	*Rhododendron maximum*	W.	Large	3–6	Shrubby	Very hardy, fine for massing. White to red
Rose	*Rosa arvensis (repens)*	W.	Few-flowered	2 4	Trailing	Good for walls and rockeries in good soil
Common elder (2)	*Sambucus Canadensis*	W.	Flat, dense	5–12	Shrubby	Purple edible fruit. Deserve more notice
Ash-leaved spirea	*Sorbaria sorbifolia*	W.	Thick, upright	3–5	Upright	For border or stream edge. Spreads rapidly
Spirea	*Spiræa decumbens*	W.	Small, thick	½	Procumbent	A good form for rockeries. Other varieties
Stephandra	*Stephandra flexuosa*	W.	Loose, drooping	2–5	Fountain-like	Easily grown and transplanted. Hardy
Storax	*Styrax Americana*	W.	Few-flowered	4–8	Spreading	Wants light porous soil. Pretty. Loose habit
Lilac	*Syringa Pekinensis*	W.	Dense, large	6–15	Spreading	Large late species. For lawn specimens
Snowball	*Viburnum molle*	W.	Roundish	5–15	Upright	Beautiful dark foliage. Later than most
Spanish bayonet	*Yucca filamentosa*	W.	Tall, loose	3–6	Lily-like	Give sandy loam. Bell-like flowers
Wild senna	*Cassia Marylandica*	Y.	Loose	3–4	Erect	Any soil but sunny exposure. Hardy

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COMMON NAME	BOTANICAL NAME	COL.	CHARACTER OF FLOWER	H'G'T FEET	HABIT	NOTES
Weigela	*Diervilla Lonicera*	Y.	Flat, crowded	2–3	Spreading	Give moisture and shade. Other colours
Dyer's greenweed	*Genista tinctoria*	Y.	Long, erect	1–3	Erect	Hardy if given winter protection
Globe flower (Japanese Corchorus)	*Kerria Japonica*	Y.	Single	4–8	Spreading	Hardy, attractive all year. Shade helps
Shrubby cinquefoil	*Potentilla fruticosa*	Y.	Single	½–4	Branching	Blooms all summer even in dry soils
Upright bush honeysuckle	*Lonicera Tatarica*	Pi.	Small, many	4–10	Upright	All varieties prefer sun. Coral berries
Sweetbrier	*Rosa rubiginosa*	Pi.	1–3-flowered	3–6	Dense	Hardy, handsome. Bright hips all winter
Carolina allspice	*Calycanthus floridus*	R.	Single, large	3–6	Erect	Sweet flowers, fine foliage. Nearly hardy
Smoke bush	*Rhus Cotinus*	Pu.	Feathery	4–10	Branching	Flowers and foliage good, form less so
Hedysarum	*Hedysarum multijugum*	Pu.	Long, drooping	2–5	Straggling	A sun-lover, good for rock work
Sheep laurel	*Kalmia angustifolia*	Pu.	Dense	1–3	Shrubby	Dwarf. Several varieties, white to red
Hardy rhododendrons	*Rhododendron Catawbiense*	Pu.	Many-flowered	3–10	Branching	Best for New York. White to purple
Flowering raspberry	*Rubus odoratus*	Pu.	Varying	3–6	Spreading	Spreads in good soil and shade. Bold, hardy
Abelia	*Abelia grandiflora*	Pu.	Plumes	2–5	Erect	Free-flowering, white and purple. Protect
Hardy buddleia	*Buddleia Lindleyana*	Pu.	Drooping	3–6	Branching	In light soil and sun, roots are hardy
Burning bush, wahoo	*Euonymus atropurpureus*	Pu.	Slender	6–18	Tree form	Any soil. Beautiful colours and fruit in fall

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SHRUBS FOR FLOWER EFFECTS THE ENTIRE SEASON—*Continued.*

COMMON NAME	BOTANICAL NAME	COL.	CHARACTER OF FLOWER	H'G'T FEET	HABIT	NOTES
JULY						
Dwarf horse chestnut	*Æsculus parviflora (macrostachya)*	W.	Large, erect	3–10	Erect	For lawn clumps. Best in moist loam
New Jersey tea	*Ceanothus Americanus*	W.	Loose	1–3	Erect	Store over winter. Light well drained
Button bush	*Cephalanthus acidentalis*	W.	Globular	3–12	Erect	Blooms till Sept. in moist sandy soil
Sweet pepperbush	*Clethra alnifolnia*	W.	Erect	3–10	Bushy	Good for late flowers. Moisture necessary
California privet	*Ligustrum ovali*	W.	Compact, long	5–15	Upright	Fine hedge plant, fragrant. Trim regularly
Memorial rose	*Rosa Wichuraiana*	W.	Single	1–3	Creeping	Half-evergreen. Fine for banks and walls
Spirea	*Spiræa Bumalda*	W.	Spreading	2–3	Spreading	Late, free-flowering. White to pink flowers
Japan lilac	*Syringa Japonica*	W.	Very large	5–20	Pyramidal	Creamy. Large flowers and bush. Care as above
St. John's wort	*Hypericum aureum*	Y.	Few-flowered	3–4	Dense, stiff	With moisture and half shade thrives anywhere
Douglas spirea	*Spiræa Douglasi*	Pi.	Dense	5–8	Erect	Western species, hardy north Several crosses
Snowberry	*Symphoricarpos racemosus*	Pi.	Loose	2–6	Spreading	Easily grown. Profuse white berries
Tamarisk	*Tamarix Odessana*	Pi.	Nodding	4–6	Upright	Feathery foliage. Will stand salt spray
Smooth sumach	*Rhus glabra*	Pi.	Large, erect	6–15	Branching	Beautiful in fall. For massing on background
Callicarpa	*Callicarpa Americana*	B.	Fruit	3–6	Erect	Blue fruit, July till fall. Give shelter

Colour symbols: W, white; Y, yellow; Pi, pink; R, red; Pu, purple; B, blue. The figure (2) after the common name indicates that the plant belongs rather to the second half of the month. The asterisk (*) marks the evergreen species.

COMMON NAME	BOTANICAL NAME	COL.	CHARACTER OF FLOWER	H'G'T FEET	HABIT	NOTES
Chaste-tree	*Vitex Agnus-castus*	Pu.	Dense	3–10	Tree-form	Hardy with protection, in sandy loam and sun
AUGUST						
Heather*	*Calluna vulgaris*, var. *alba*	W.	Small	½–3	Low bushy	Five varieties for sunny banks and slopes
Tamarisk	*Tamarix hispida*	Pi.	Dense	3–6	Upright	This and a larger form good for sea coasts
Verbena shrub	*CaryopteirsMastacanthus*	B.	Dense	1–5	Low,broad	Blooms on new growth each year. Roots hardy
Swamp huckleberry	*Vaccinium corymbosum*	B.	Small spikes	4–12	Straggling	Delicious fruit and brilliant fall colours
Athea, rose of Sharon	*Hibiscus Syriacus*	Pu.	Single	6–12	Branched	Any fair soil. Varies in colour from white
SEPTEMBER						
Groundsel bush	*Baccharis halimifolia*	W.	Large tassels	3–12	Angular	Filmy fruit tassels. Fine for seashore
Bush clover	*Lespedeza Sieboldi*	R.	Sprays	1–3	Spreading	Really a hardy herb. *L. bicolor* a shrub
OCTOBER						
Witch hazel	*Hamamelis Virginiana*	Y.	Single	6–20	Bushy	Odd explosive fruit. Foliage good in fall
Spindle tree	*Euonymus Bungeanus*	Y.		5–15	Slender	Fruits from white to purple on two varieties
Blue dogwood	*Cornus alternifolia*	B.	Fruit	3–8	Bushy	Mass for fall effects. Deep blue fruit
Matrimony vine	*Lycium vulgare*	Pu.	Fruit	2–6	Thick, bushy	Trailing, for walls but not flower beds
Beauty fruit	*Callicarpa purpurea*	Pu.	Fruit	1–4	Thin, low	Give warm dry soil, sunny place and protection

Colour symbols: W. white; Y. yellow; Pi, pink; R, red; Pu, purple; B, blue. The figure (2) after the common name indicates that the plant belongs rather to the second half of the month. The asterisk (*) marks the evergreen species.

SHRUBS WHICH THRIVE IN SHADE

Lilac
Honeysuckle
Berberis aquifolium and other evergreen species
Clematis paniculata
Box
Laurel
Cornus Mas
Cotoneaster
Thorns, various
Spurge Laurel
Daphne cneorum
Mezereum
Gaultheria Shallon
Hypericum, various
Ivy
Privet
Prunus spinosa
Rhododendron ponticum
Sweetbrier
Bramble
Snowberry
Weigela
Jasminum nudiflorum
Gueldre Rose
Wistaria

Many roses also will grow and blossom in shade, though not so bountifully as when put in a sunny place. The following kinds are recommended:

Ayshire
Hybrid China
Pink China
Penzance Briers
Gloire de Dijon
Mme. Alfred Carrière
Reine Olga de Wurtemburg

MANURES

Though the subject of manuring is a highly scientific one in which the expert is able to determine just what constituents for a particular purpose should be included in the manure, his services have more value in agriculture than in horticulture. In the treatment of garden soil the question is narrowed down considerably, and, only in few cases, calls for special measures. Of organic manures for garden use there is nothing more serviceable than well-rotted stable or farmyard manure, which may be regarded as the simplest, most readily available, and generally most efficient of stimulants for exhausted garden soil.

Manures are not only useful in providing plant food, but they may render valuable service in tempering an

undesirable soil, and, when used as a mulch, in providing protection from cold or preventing undue evaporation.

On heavy land, turfs, leaves, vegetable refuse, and stable manure containing a good proportion of straw litter assist to lighten and let air into the soil.

On the other hand, on light, sandy soils, manure of heavier consistency, containing pig or cow dung, tends to give the ground more adhesion and body.

Horse manure, though so universally applied, is not chemically so rich in fertilizing matter as some others, but its cleanly and inoffensive character is in its favour.

Sheep and poultry manures are rich in nitrogenous constituents, and are therefore useful as top dressings for growing plants. Night soil is highly esteemed by rose growers, who dress their rose grounds with it in the spring, but its stench is against it for use near the house.

Liquid manures are valuable stimulants for flowering plants, holding their fertilizing matter in a form which enables it to be quickly assimilated. The following liquid manures of organic origin are in common use:

Farmyard drainings	1 part
Water	3 parts
Farmyard dung	1 bushel
Water	30 gallons

(It is better with this and other organic mixtures to enclose the solid matter in a coarse bag and immerse it in the water. It should soak for two or three days before use.)

Horse, sheep, or cow dung	1 bushel
Water	30 gallons
Pig or poultry dung	½ bushel
Water	30 gallons
Soot	1 peck
Water	30 gallons
Soot	½ peck
Poultry dung	½ peck
Water	30 gallons

(This last-mentioned mixture is regarded as one of the

finest liquid manures known, and is specially recommended for roses and sweet peas.)

House slops	1 part
Water	2 to 3 parts

Dressings of dry lime and soot are good agents for the destruction of too abundant insect life, the former being, also, a valuable corrective for "sourness."

Purely chemical manures fall into three categories:

Nitrogenous
Potassic
Phosphatic

Nitrogenous manures stimulate leaf and stem growth, and in excess do so at the expense of flower production. Nitrate of soda and sulphate of ammonia are the substances most generally used, and they are applied either dry at the rate of three quarters of an ounce per square yard, or in solution at the rate of one half ounce to the gallon of water.

Potassic manures are regarded as excellent stimulants to flower production, and require to be incorporated with the soil in advance of seeding. Sulphate, muriate, and nitrate of potash, and kainit are examples of those commonly in use. They should be used at the following rates:

Sulphate and muriate of potash	1½ pounds per square rod
Nitrate of potash	1 pound " " "
Kainit	3 pounds " " "

Or, in solutions of one half ounce to the gallon of water.

Phosphatic manures also require to be applied in advance. Their function is to assist cell growth by manufacturing protoplasm. They thus assist to build up the structure of the plant.

Superphosphate of lime, basic slag, and bone meal are the substances in general use. They are usually applied at the rate of five pounds per square rod as a top dressing

or raked in. The first only is soluble and adapted for use in liquid form.

Generally, organic manures are best applied in the autumn, and it is convenient to distribute them in times of frost, when the ground is hard and therefore not easily disturbed by the wheelbarrow and gardener's boots. Animal manures of the farmyard and stable type may be used at the rate of two barrow loads per square rod.

Farmyard manure is naturally variable in the proportions of its fertilizing constituents. An average sample may be considered as containing:

12 to 15	pounds of	nitrogen	to the ton of manure
10 to 15	"	potash	
7	"	phosphoric acid	
20	"	lime	

An excellent general chemical manure is a mixture of superphosphate of lime four pounds, and kainit, two pounds. This should be dug in early in the spring and may be supplemented later, when the plants have started into growth, by applying nitrate of soda, two pounds. The quantity given is for one square rod of surface.

The following manures for special purposes are recommended by a successful market gardener.

Tomatoes.

Guano	1 part
Nitrate of soda	1 "
Kainit	1 "
Superphosphate	1 "

Use at rate of two ounces to the square yard of soil, or in a solution of one ounce to the gallon of water.

Cucumbers.

Guano	1 part
Nitrate of soda	1 "
Sulphate of potash	1 "
Superphosphate	½ "

Use at the rate of one ounce a week for each plant, watering liberally after each application.

Chrysanthemums.

Nitrate of soda	1 part
Kainit	1 "
Superphosphate	1 "
Sulphate of iron	¼ "

Use at the rate of one ounce to a gallon of water as a liquid manure.

Carnations.

Sulphate of ammonia	1 part
Kainit	1 "
Superphosphate	1 "

Use as the last.

Grape Vines.

Guano	1 part
Kainit	1 "

Use as a top dressing at the rate of one quarter pound to the square yard of soil. As a manure when the berries are forming the following is good:

Guano	1 part
Nitrate of soda	1 "
Muriate of potash	1 "
Superphosphate	1 "

Use as above.

One other method of improving the soil, that may be practised in the vegetable garden and wherever annual plants can be removed by September, is the use of green manures. This means growing a forage crop such as peas, clover, oats, barley, rye or buckwheat, to be left untouched until late fall or early spring, when it is plowed under. This is an especially valuable treatment for extremely light or heavy soils, and around fruit trees. In the latter case sow the crop about July 15th and plough it under the following spring.

In the garden, where, it is to be hoped, there will be

little bare soil until September at least, a catch-crop may be sown, to be plowed in after a couple of months' growth; or winter wheat or rye may be sown, to be plowed under in early spring. The latitude and the seasons for plowing will determine which is the better of these methods.

COMPOSTS

A compost is an artificial soil, in which are introduced the constituents best suited to the purpose in view. The following composts are each excellent for the purpose specified:

Raising Tomato Plants.

Sifted loam	2 parts
Sand	1 part
Quicklime	$\frac{1}{10}$ "

Growing Tomatoes.

Turfy loam	4 parts
Decayed stable manure	1 part

To the above add a 5-inch potful each of soot and quicklime to the barrow load.

Raising Cucumber Plants

Fine chopped decayed turf	4 parts
Decayed stable manure	1 part
Sand	1 "

Growing Cucumbers.

Chopped decayed turf	3 parts
Decayed stable manure	1 part

To the above add a 5-inch potful each of soot and quicklime to the barrow load.

Roses in Pots.

Turfy loam	4 parts
Decayed stable manure	1 part

To the foregoing add a 5-inch potful of bone meal and the same quantity of soot to the barrow load.

Ferns.

Turfy loam	2 parts
Peat, or leaf mould	1 part
Sand	1 "

Chrysanthemums.

Turfy loam	3 parts
Decayed stable manure	1 part

To the above add a 5-inch potful each of bone meal and soot to the barrow load.

Carnations.

Yellowish fibrous loam	3 parts
Decayed farmyard manure	1 part

Clean sand — sufficient to keep the mixture friable and porous.

Grape Vines.

Good fibrous turf	10 loads
Decayed farmyard manure	1 load
Charcoal	1 barrow load
Wood ashes	2 barrow loads
Broken bones	1 cwt.

Potting Soil for General Purposes.

Loam	2 parts
Leaf mould	1 part
Sand	½ "
Decayed stable manure	½ "

GARDEN GEOMETRY

When geometrical shapes are introduced into garden details, accuracy is an important consideration, because even the untrained eye resents a departure from the correct form. The usual shapes of beds may be laid down with a few pegs, a stout cord, and a tape measure. An

old, worn dinner-knife makes an excellent scriber for scoring the turf. The following brief directions apply to the principal figures used in ordinary garden practice.

Circles and Parts of Circles.— Use a round peg and drive it in firmly at the centre point. Make a simple

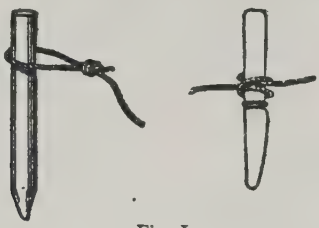

Fig. I

loop at the end of a length of cord (not a slip-knot, which would bind on the peg), and drop it over the peg; measure off the desired radius along the cord, and secure the knife handle to it with two half-hitches. Keep the cord taut while scribing the circumference with the knife blade.

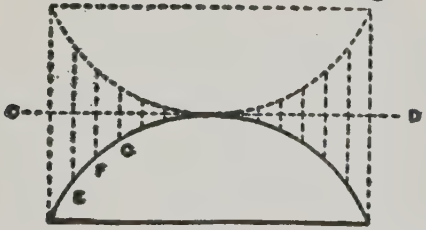

Fig. II

In setting out part of a circle when it is not possible to use the centre peg, as, for instance, when the centre falls within a building, describe the necessary segment the reverse way, as at A B in Figure II and stretch a cord C D along the grass surface, making a tangent to

it. Mark the cord with a series of equal divisions with chalk, and from these divisions measure from cord to curve, and set off the measurements in the opposite direction, marking each with a peg, as at E F, &c. Then join these various points with a clean curved line, so as to repeat the curve the reverse way.

Fig. III

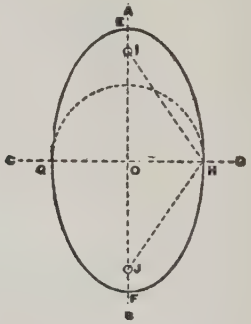

Fig. IV

Ovals and Ellipses.— Using the term "oval" in its true sense of *egg-shaped*, the following method gives a good result (Fig. III). Stretch cords A B and C D at right angles to each other, and drive a peg at their intersection E, from which as centre describe a semicircle for the wide end of the oval. At points equidistant from E in both directions on the line A B (produced if necessary) describe arcs from the ends of the semicircle to G and F. Join the points F and G, with their respective centre pegs, through the point H, on the line C D, and drive a peg at H, from which as centre describe the arc G D F, completing the figure. The arc G D F will be small or large according to the position chosen for the point H, which must be determined by the eye. The oval thus described is not a recognized geometrical figure, being compounded of arcs of three different radii. A better result is ob-

tained by combining a semicircle with a semi-ellipse, as indicated in the accompanying illustration, (Fig. IV).

The ellipse is described in the following way: Stretch two cords A B, C D, at right angles to each other, and mark off the lengths O E, O F, each equal to half the length of the required ellipse, and O G, O H, each equal to half the width of the same. From H measure HI and H J, each equal to O E. Drive pegs at I, H, and J, and stretch a cord from I round H to J, having loops at I and J. Remove the peg H and the other cords, and inserting the scriber in the bend of the cord joining I and J, move it round from E to F, via H, keeping the cord taut, when its point will describe one half of the ellipse. Reverse the position of the knife, and work round in the opposite direction, via G, and the ellipse will be completed.

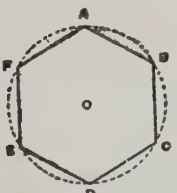

Fig. V

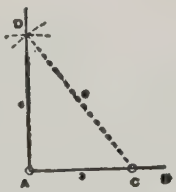

Fig. VI

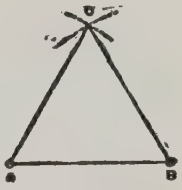

Fig VII

The Hexagon.— Describe a circle as above directed, and with the tape mark off the points A, B, C, D, E, F on the circumference so that the distance from each point to the next one, *in a straight line*, is equal to the radius of the circle. See Figure V.

Right Angle.— When working on a large scale it is not practicable to use a square when setting out a right angle, and the following is the best method: If, in Figure VI, it is required to mark out a line from the point A in the line A B at right angles to A B, measure from A to C a length of three yards, or feet, or any convenient unit. From C as centre describe an arc of radius equal

to five units, and from A as centre another arc of radius equal to four units. Join the point D where the arcs intersect to A, and the line D A will be at right angles to A B. This follows from the well-known property of the right-angled triangle, that the square on the

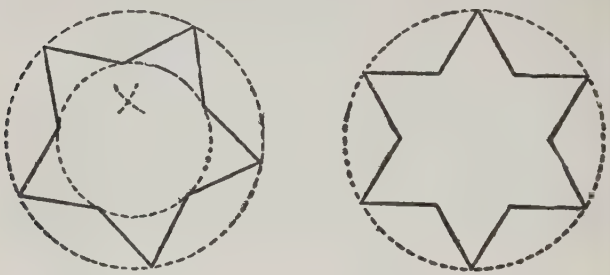

Fig. VIII

hypothenuse is equal to the sum of the squares on the other two sides, thus:

$$3 \times 3 + 4 \times 4 = 5 \times 5.$$

When using this method on a considerable scale, apply it to the longest lines in the figure, and work out the smaller details with reference to the two right-angled lines first laid down. This method was used in setting out the Pyramids.

An Equilateral Triangle.— Taking A B as the dimension of one side, describe arcs of radius A B intersecting at C and join C A, C B. See Figure VII.

Stars.— These should be described within a circle so that all points lie on the circumference. A second smaller circle should be described to fix the points of the entering angles, which must be midway between the circumferential points. This may be done by describing arcs of equal radius from two adjacent points, and connecting their intersections with the centre of the circle. The point where this line intersects the smaller circle

will give the position for the entering angle, as shown in the illustration, (Fig. VIII).

Joining Curves.— When a curve forming part of a circle has to be joined to a straight line, the centre of the curve must lie upon a line at right angles to the other line at the point where the curve is to start. When two

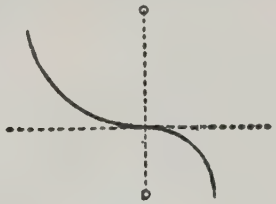

Fig. IX

curves of different radii have to join to form one continuous line, they must have a common tangent at the point of junction, and thus may be considered as a double case of that first dealt with. This applies whether the two component curves are reversed in direction or not, as will be seen in Figure IX.

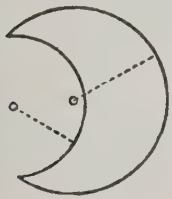

Fig. X

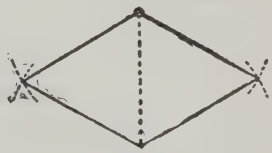

Fig. XI

Diamonds.— These may be described as two equilateral triangles with their bases coinciding; or, if a longer diamond is required, the triangles must be of isosceles type, set

off by striking arcs of suitable radius from the ends of the common base, as shown in Figure XI.

Crescents are formed by the intersection of segments of two circles as shown in Figure X.

Rectangles.— The centre points of rectangles may be found by drawing two diagonals, which will intersect at the centre of the figure. The two diagonals of a rectangle should measure the same. This affords a good means of checking the figure to see whether it is truly square at the angles.

Irregular Curves.— In laying down irregular curves from a plan, the best method for ensuring accuracy is to work by offsets. This consists in laying down a base line having approximately the general direction of the curved line, and measuring from it to the curve at fixed intervals. These measurements are termed offsets and they should be at right angles to the base line. The points so determined are pegged and subsequently joined, thereby reconstructing the curve. (See Fig. 30, page 131.)

GARDEN TOOLS AND APPLIANCES

Though the gardener's equipment need not be very extensive or costly, it should include good serviceable tools and appliances, without which his work will be tedious and ill done. An eminent professor of horticulture has applied the term "finish" to that quality in the garden which implies not only the care of each individual plant, but general orderliness and cleanliness in the garden. This is best secured by ensuring that there is "a place for everything," and that every necessary tool and appliance is at hand for the gardener's use. "Finish" is only another term for general efficiency.

The Tool-shed.— This may be quite a small affair, but should never be omitted. Garden tools occupy little space when properly stored, but when left about the garden they seem to be legion. In large gardens it is well to combine the tool-shed with the potting house. A rack for rakes, hoes, and other long-handled tools

is a simple convenience worth having, and prevents the not uncommon accident of a blow in the face from the handle of a tool, on the end of which the gardener has incautiously stepped. Small tools, like trowels, and pruning knives and shears, should be kept in a drawer.

The list of tools and appliances need not be a long one. The following items are indispensable to the owner of a small garden plot:

Dibber	Rake
Spading fork	Pruning shears (*secateur*)
Hammer	Spade
Hoe	Broom (birch)
Trowel	Mower
Wheelbarrow	Hose
Watering can	Garden Basket
Grass shears	Spray Pump

A fuller equipment would include in addition:

Roller	Pruning saw
Reel, stake, and line	Weeding fork
Sieve	Scuffle hoe
	Edging knife

In many large gardens some of these items would have to be multiplied, and others might be added, including such special tools as:

Bill-hooks, for hedge slashing	Lopping shears
Fruit picker	Syringe
Water barrow	Wire-cutting pliers
Garden engine	Shovel
Pick and mattock	Turfing iron
Grass edge trimmer	Spud
Sprinkler	Grafting tool
Hand cart	Hose reel
	Ladder and step ladder

Over and beyond these items the shrewd gardener will devise many other useful appliances. A few are shown on the pages following.

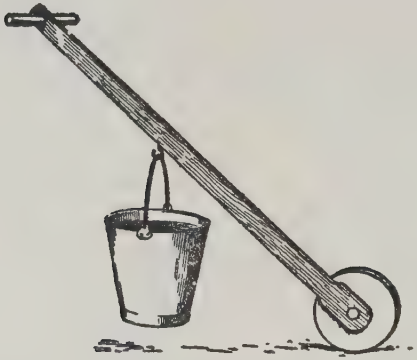

Fig. XII. — The *trundler*, a handy device for conveying pails and cans of liquid from one part of the garden to another. This is rarely seen in American or English gardens, but is common on the continent.

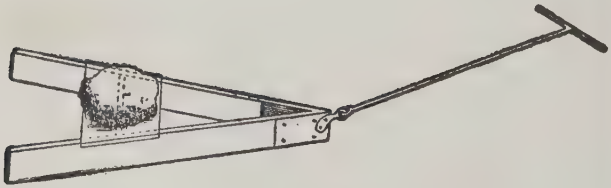

Fig. XIII. — The *snow plough*, useful for cleaning the garden paths, and easily made by a handy mechanic.

Fig. XIV. — The *ring*, for carrying two pails of water, with less exertion than if carried by the arms alone.

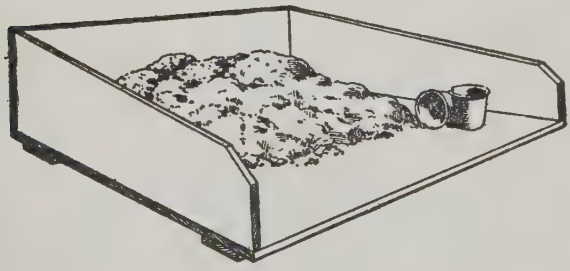

Fig. XV. — The *mixing board*, for making up composts.

Fig. XVI. — The *bridge*, for wheeling barrow over edgings.

Fig. XVII. — *The turf beater*

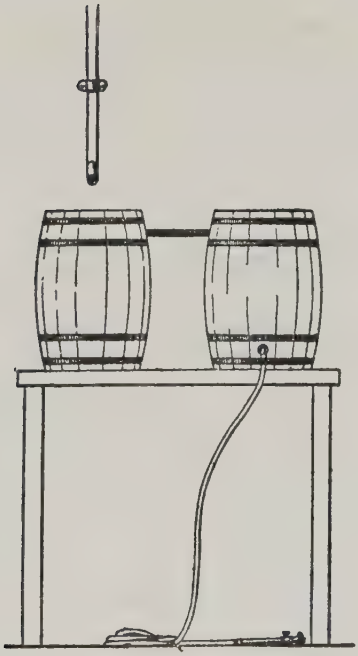

Fig. XVIII.— A large rain-water barrel fixed five or six feet above the ground level, against the house wall, receiving the whole or part of the roof water. The head of water then enables the use of a hose. A second barrel may be added, the two being coupled by lead piping near the top. Keep the barrels well covered to prevent mosquito breeding. If other water under pressure is available, this supply may be retained or dispensed with according to the wishes of the gardener.

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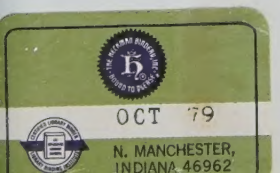
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